

The Lease

AS A FINANCING AND SELLING DEVICE

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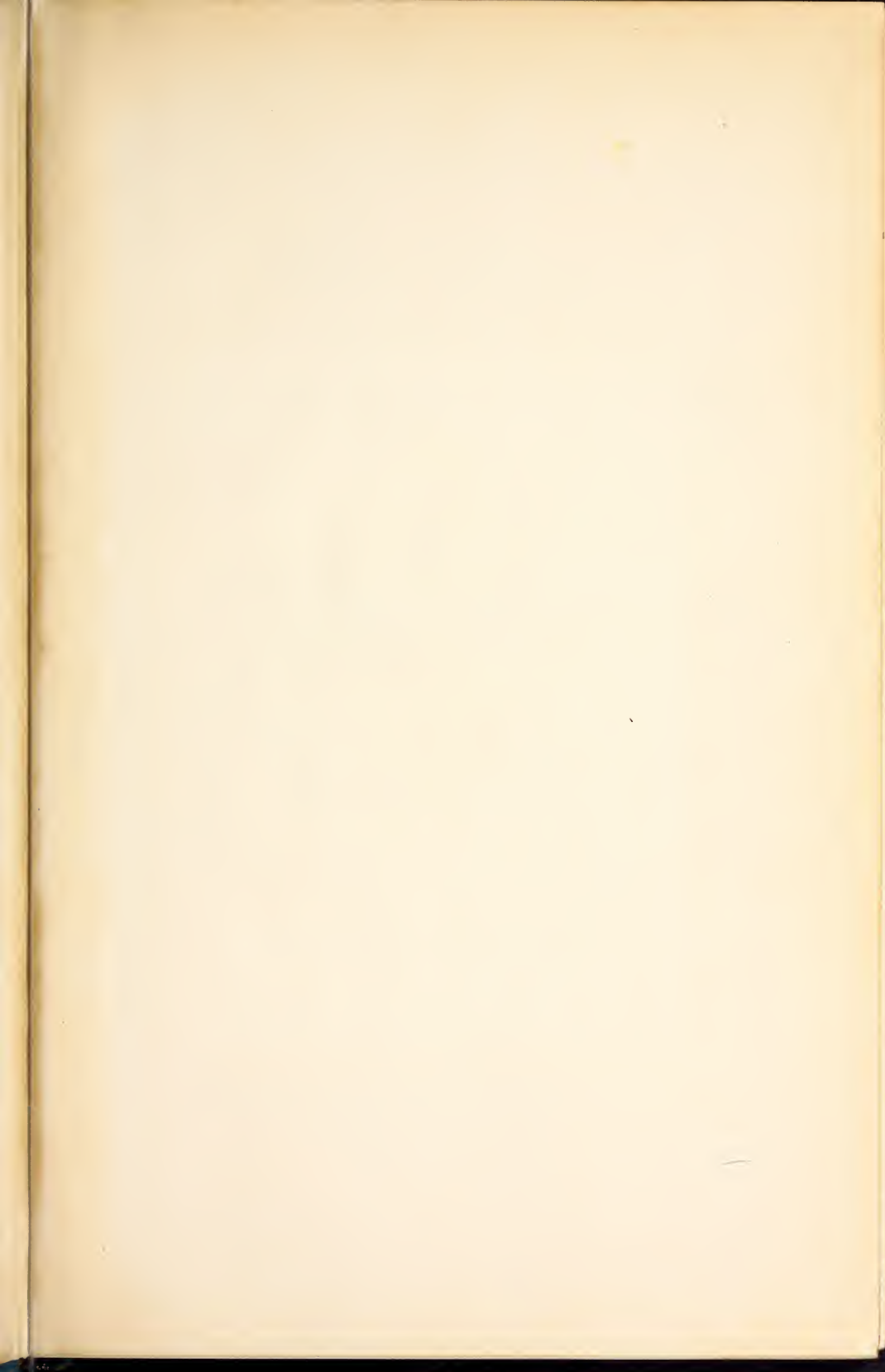
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AS A FINANCING AND SELLING DEVICE

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INTRODUCTION

This study attempts to answer the question, "Why, and under what circumstances, should a manufacturer lease rather than purchase land, buildings, and machinery?"

The study is not a survey of business practice with respect to the lease. The pages that follow are devoid of tables that compare the number of companies that use the lease with the number of companies that prefer to purchase their fixed assets outright. Neither will a reader find herein a review of the practices and policies of companies that do lease.

The sole objective of the authors has been to develop a theory of the use of the lease.

The authors were aided in their research by Peter S. King and David B. Gaffney of the School of Business Administration.

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1891

Chapter I

THE OWNERSHIP OF FIXED ASSETS

Accountants classify land, buildings, and machinery as *fixed* assets and insist that such assets be recorded in the ledger at cost of acquisition. Land does not depreciate with use but the usefulness of buildings and machinery declines with the passage of time. Consequently, at the end of each accounting period a portion of the cost of such properties is transferred to the cost of operation for the current period, and the remainder is carried to the balance sheet, to be listed among the assets of the enterprise. Since all fixed assets except land are ultimately charged to cost of operations, one might well conceive of a fixed asset merely as a prepayment of some of the future operating expenses.

REAL NATURE OF A FIXED ASSET

The accounting routine for handling fixed assets is so well established that few persons, particularly professional accountants, ever take time to inquire into the real nature of what they are doing. Almost everyone, including accountants, knows, for example, that land is a "portion of the earth's surface," that a building is an "edifice designed to stand more or less permanently and to be used as a dwelling, storehouse, factory, or shelter for animals," and that a machine is a "contrivance of a mechanical sort, designed to transmit and modify force so as to do some desired kind of work." These definitions, taken from a dictionary,¹ emphasize the physical characteristics of what the accountant and

¹ See Webster, *New International Dictionary*

the businessman choose to call fixed assets. They are the popular concepts of the terms found on a balance sheet.

It is generally supposed, therefore, that when a businessman expends \$100,000 for a building with an estimated life of twenty years he is acquiring *a structure*, and that the annual depreciation charges of \$5,000 represent portions of the structure which have evaporated in some mysterious fashion. But there is a more realistic way of viewing the situation. According to this alternative view, a building is acquired *not because it is a structure but because it is capable of rendering a series of services* which are deemed essential to the productive operations of a particular enterprise. Thus, a company that buys a building for \$100,000 is, in reality, purchasing a series of essential services.

Even though a particular structure is expected to stand for twenty years, its serviceability to the user may be limited to a shorter period, say, to ten years.² If so, then the businessman would do well to view its acquisition as an acquisition of ten specific building services of use to the company, together with certain residual services of no use to the company but of some possible use to other companies. The problem is to allocate the \$100,000 purchase price to the various services acquired. One form of allocation is shown on Page 9.

INSTALLMENT NATURE OF FIXED-ASSET SERVICES

The services of which a structure is capable must normally be rendered *one after the other* over a period of time. For example, it is not possible to enjoy the 1952 service of a building during the year 1951. If the service

² If one conceives of an expenditure for a building as being made to acquire a series of services rather than a structure, it is easy to understand why a building that appears to be in sound condition may actually be almost fully depreciated. It is only necessary to *distinguish carefully between physical and use deterioration*.

ALLOCATION OF PURCHASE PRICE TO ANNUAL SERVICES

<i>As the manager should visualize it</i>	<i>Money Amount</i>	<i>Traditional Terminology</i>
Total cost of acquiring all the future services of structure	\$100,000	Book value of the building
Estimated sales value of residual services (beyond ten) to other companies	30,000	Estimated salvage value
Total cost of acquiring services No. 1 to 10	70,000	Value to be depreciated
Cost of each of first ten services	7,000	Annual depreciation (straight line method)

to be rendered by a fixed asset in the current accounting period could be isolated and labeled as "Service No. 1," and if the service to be rendered in the subsequent period could be isolated and labeled as "Service No. 2," and so on through the series, then it would be easy to think of a fixed asset simply as "a bundle of services." The depreciation computation described above then becomes merely a method of isolating and determining the price paid for each service contained in the bundle. Since *only one* of these services is to be used in the current accounting period, only that one is a current cost of operation. All the rest of the costs in the bundle are of the nature of prepaid expenses, i.e., future costs of operation.

To illustrate this concept, assume a machine is to be purchased for \$5,000. This machine is estimated to be useable for five years, after which it is expected to have no salvage value. At the time of acquisition, the machine is a bundle of *five services*, identified in the accompanying chart by the letters "a", "b", "c", "d", and "e." Each service obviously cost \$1,000. On December 31, 1951, one service, "a," will have been used up and its

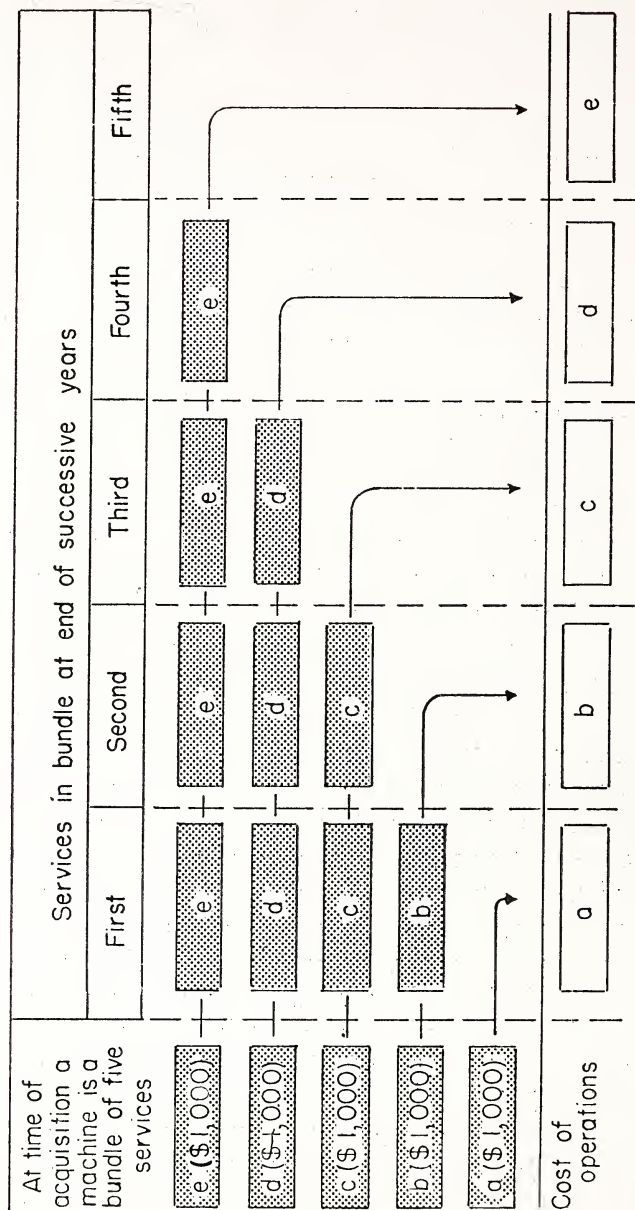


FIGURE 1

Diagrammatic presentation of the bundle-of-service concept of fixed assets.

cost recovered from the sale of the firm's products. On December 31, 1951, as the chart clearly shows, the funds expended for services "b", "c", "d", and "e" will represent *prepayments of the costs of operations* in the years 1952, 1953, 1954, and 1955, respectively.

NATURE OF OWNERSHIP

The "bundle-of-service" concept of fixed assets developed above makes it necessary to overhaul popular concepts of ownership and the value of owning. First, it will be clear that the services rendered by a fixed asset, rather than the act of holding legal title to it, are essential to productive activity. Sometimes it is possible to purchase services one by one as they are needed. Thus service "a" in the diagram above might be purchased at the beginning of 1951, service "b" at the beginning of 1952, and so on. Since the funds expended for each year's service are recovered from customers who buy the firm's product during that period, a policy of buying fixed-asset services in the period of use greatly reduces the total amount of funds needed. For example, in the illustrative case of the preceding paragraph, only \$1,000 is needed if the five services are acquired singly year by year, but \$5,000 is necessary if all five services are acquired at once.

Secondly, it should be clear that owning a fixed asset really means purchasing *all* the future services which that asset is capable of rendering. Sometimes in order to enjoy the current service ("a" in the diagram) it is necessary to buy (or to agree to buy) all the future services ("b" to "e"). When this is so, an owner-user is forced to run certain risks inherent in legal ownership. For example, since there is always a chance that a change in circumstances may render a specific service obsolete, he must assume the risk involved in the expectation of a continued need. Then, he takes a chance of wrongly

estimating the number of future services he is acquiring. An asset expected to last twenty years may actually last only eighteen. On the other hand, one who assumes this risk also has a chance for profit: the asset may last twenty-five years, instead of the estimated twenty.

THE COST OF OWNING

Since the use of a current period's service is all that is essential to current production, the advisability of prepaying service costs of future periods obviously should be studied with care. As was explained earlier, only the price paid for a service expiring during the current period is considered by accountants to be a cost of operation. This was illustrated in Table I, where the cost of service "a" was treated as an operating cost for the year 1951. However, there is a very real cost to the enterprise of prepaying "b", "c", "d", and "e". Presumably the \$4,000 used to prepay these services might have been put to other and more profitable uses. To illustrate, suppose that this possible alternative use of the \$4,000 would have netted the enterprise earnings of \$800. Then the prepayment of services "b" to "e" involved the foregoing of this \$800. Thus the true cost of operating with owned property in 1951 was \$1,800, i.e., \$1,000 for the use of service "a" plus the loss of \$800 on the funds tied up in the prepayment of services "b" to "e".

If a manager had been offered the alternatives of acquiring the five services by paying \$1,400 per annum, or of buying all five at a price of \$5,000, the type of costing done by conventional accountants would have suggested the advisability of owning rather than leasing at the prices suggested. Yet, as has been demonstrated, the manager would have found it \$400 more profitable to lease at \$1,400 than to purchase at \$5,000. The comparison he should have made is the following:

<i>Cost of Leasing</i>		<i>Costs of Owning</i>	
Cost of Service "a"	\$1,400	Cost of Service "a"	\$1,000
		Profit forfeited on funds invested in ser- vices "b" "c" "d" "e"	800
Total Cost	\$1,400	Total Cost	\$1,800

TRADITIONAL PREJUDICE IN FAVOR OF OWNERSHIP

Ownership is Natural. Many persons have a deep-seated feeling that "one should own what he uses." Their belief is quite logical if applied to single-use goods where it is not practical to separate ownership from use. A consumer of an orange must, of necessity, secure ownership (by purchase, theft, or gift) for after consumption nothing of value will remain to the owner.

But the maxim "one should own what he uses" is not so logically applicable to many-service goods if by "own" is meant "to have exclusive right to all future services." On the basis of strict logic there is no compelling reason why one must hold title to future services if he desires to use only one or two. In such an event it would appear more sensible merely to purchase the one or two services wanted and to allow some one else to assume the risk of owning the remaining services.

In spite of all logic, however, the feeling persists that ownership is desirable *per se*. This persistence probably represents a survival of a psychological complex developed in early childhood. A small child obtains pleasure from toying with things. Very soon he classifies toy things as "his" or "not his." From experience he learns that his ability to control the former is more absolute than his ability to control the latter. He notes that he is constantly in danger of being deprived of the enjoyment of things that are not his. This ever-present *fear of dispossession* leads to an intense conviction that owner-

ship of things is desirable *per se*, so that by the time he enters school, he is thoroughly conditioned to the belief that "owning things is natural."

Operating a business enterprise is not a childish activity. From the social point of view, business enterprises exist to produce goods and services for use; from the business point of view, they exist for the profit of their owners. Decisions as to whether it is better for enterprises to own or lease buildings and machinery should be based upon cold calculations of the effect upon production and profits. Such decisions should not be influenced by prejudices growing out of childhood fears of dispossession. Ownership is not natural: it is a learned response.

Ownership as a device for obtaining social prestige. In society, as now constituted, outright ownership—i.e., the exclusive right to all future services—is one of the accepted measures of social standing. As Veblen³ pointed out, the social position of male individuals in primitive tribes depended upon their prowess in battle. The best fighter was the most honorable man and the evidence of his ability in battle was the number of war trophies that he could display. Since none of the younger generation could tell whether his trophies were actually won in battle or stolen from a warrior long dead, it became the custom to accept the evidence at its face value.

When society shifted to a pastoral economy, cattle were substituted for war trophies as a measure of social standing. Since possession of large herds necessitated many acres of grazing land, the size of one's pasture became the index of one's wealth.⁴ Eventually the agricultural

³ Thorstein Veblen, *The Theory of the Leisure Class*, London, George Allen and Unwin, Ltd., 1924

⁴ Remnants of this practice survive in our economy of today. It is still the practice of wealthy men to surround their homes with broad lawns, which are in reality only pastures without cattle.

economy gave way to a manufacturing and trading economy. The criterion remained the same—the man with the most wealth was still the most honorable. But the shift makes it very difficult to judge one's genuine social standing, for much of the wealth of merchants and manufacturers is in the form of cash in the bank, inventories, and receivables; forms that are not easily visible to the general public.

The efficiency of wealth-ownership as a means of establishing the social prestige of an individual has been lessened still further by the rise of the corporate form of business enterprise. The relationship between the fixed assets of the modern giant corporation and the equities of its individual stockholders is so indirect as to be of little value for prestige purposes. An individual gains very little if any prestige in his home community from the fact that a large corporation of which he is a stockholder owns vast amounts of fixed assets. The same cannot be said of the small closed corporations, however. The public at large is still inclined to associate the assets of a small company with the few individuals who are known to hold the principal amount of outstanding stock. The social position and credit standing of these stockholders is enhanced by the amount of fixed assets *owned* by the enterprise.

Brief summary. A tendency exists for businessmen to prefer ownership of fixed assets even when cost considerations suggest the desirability of leasing. This prejudice in favor of ownership is a survival of the notion that buying all the future services of a given property at once is a more natural procedure than buying such services as needed. The prejudice lingers because of the tendency of society to base social standing on the amount of ownership. A clearer understanding of the nature and cost of fixed-asset ownership, together with the rise of large

impersonal corporate enterprises can be expected to remove the subjective prejudice in favor of ownership and place the question of owning *vs.* leasing of land, buildings, and machinery on a more objective basis.

THE RISE OF THE LEASE

The leasing of land is a practice "as old as the hills." Land is a multi-service good, capable of giving off service after service *ad infinitum*. If an owner of land does not himself wish to enjoy the current service of his property, that particular service is lost forever. There is no way of preserving land services. For this reason it has been a common practice for landlords to sell land services in each period to the highest bidder. The amount paid for such a service is called rent.

The leasing of buildings is also common practice. Until recently, however, buildings have been leased by their owners for the same reason that landlords leased land:—*viz.*, to avoid wasting a service. As we have seen, an individual acquiring title to a building actually has purchased all the future services of the structure. Having done so, he is under pressure either to use or to sell each service as it is renderable. Within the past decade, however, a new reason for renting buildings has been discovered. The managers of certain companies found that it did not pay to own buildings when the funds could be used more profitably to finance current operation.

Many of these informed managers therefore began to transfer title to their land and buildings via a sale to insurance companies, for a consideration, thereby freeing large amounts of funds for working capital uses. Vendors of the buildings then agreed to buy back *uses* of the buildings on an annual rental basis.⁵

⁵ For example, in 1946 Lit Brothers sold their Market Street store occupying a full city block in Philadelphia, to the University of Penn-

A building differs from a machine only in appearance. From a business point of view both represent expenditures of funds for a bundle-of-services that normally will require more than one accounting period to exhaust. A machine is a bundle-of-services that is likely to be exhausted in a relatively short period, varying from three to ten years. Thus, any reasoning that applies to the advisability of leasing rather than owning buildings would also apply to leasing rather than owning machinery. The truth of this fact is only now beginning to be realized, and a few manufacturers have begun leasing rather than selling the machines they produce. This, of necessity, means that some machine-users rent rather than purchase their machinery. The tendency toward leasing lags, however, because of the traditional attitudes toward ownership described earlier. Most lessors of machinery today are the manufacturers of the leased machinery. The practice is quite common in the following eight industries:

- (1) Office machinery and equipment
- (2) Shoe manufacturing machinery
- (3) Construction equipment
- (4) Container machinery
- (5) Transportation equipment
- (6) Textile and tobacco machinery
- (7) Refrigeration equipment
- (8) Machine tools of certain types

The increasing use of the lease in the above industries suggests that the financial and marketing possibilities of lease agreements should be investigated more fully by potential buyers. The fact that such companies as International Business Machines Corporation and Remington Rand, Inc., find it advisable to lease as well as to sell

sylvania for \$4,187,500 after which the company leased the store for a term of 23 years at an annual rental of \$275,000. In addition, the company agreed to maintain and repair the property and to pay taxes and insurance.

their products, indicates that many of the users of their equipment have found it profitable to lease rather than to purchase.⁶

In addition to the manufacturers who lease their own products, there has recently come into the field a company, known as the Rentco Company, which is in the business of buying machinery from manufacturers and leasing it to users on an annual rental contract. This makes it unnecessary for the users to invest large sums of money in equipment.⁷

CHARACTERISTICS OF A TYPICAL LEASING SITUATION

Manufacturers of *highly complex* machinery often find it convenient to lease their products. The many services going with the installation of such machinery, such as training of personnel, counseling on consumer-customer problems, mechanical service involved in repairs and maintenance, together with the difficulty of estimating the cost of ownership, present a setting that makes the lease arrangement attractive to potential users. Some manufacturers of *very expensive* equipment are at times forced to resort to the lease if users of their equipment are small firms that lack extensive financial resources. Small companies can often meet the annual rental payments on such equipment but find it impossible to raise sufficient funds to purchase such machinery outright. If they take title by giving a chattel mortgage, the mortgage seriously

⁶ See "Pitney-Bowes: Profits in Postage," *Fortune*, August, 1950, p. 72. Other companies which lease their products are Addressograph-Multi-graph Corporation, United Shoe Machinery Company, The Compo Shoe Machinery Company, American Can Company, Continental Can Company, Excello Corporation, Owens-Illinois Glass Company (Ohio), Automatic Voting Machine Company, International Cigar Corporation, Reice Corporation, Frozen Food Products Inc.

⁷ For a description of the operation of this company read: John Anthony, "You Can Rent It For Less", *Iron Age*, August 31, 1950, pp. 51-55.

affects their credit standing. If expensive equipment happens also to be new in type, many enterprisers, small and large, hesitate to invest their funds in an experimental installation. Frequently, the need for the expensive equipment is *sporadic*. In such cases it is not economical for a small company to purchase machinery. For example, a contractor who constructs only ten or twelve houses a year cannot afford to invest in expensive forms for pouring concrete basement walls. Yet he might become a user of such forms if he could obtain them on a rental basis. Manufacturers of equipment that requires *frequent servicing* find it desirable to lease rather than to sell since small concerns owning such equipment tend to over-economize on maintenance, thereby causing the machine to perform unsatisfactorily. This unsatisfactory performance reflects upon the manufacturer and causes potential users to prefer cruder and less economical methods of production. If machinery is leased with a service contract, the manufacturer not only protects his reputation but also may profit from the contract.

Leasing a piece of equipment may be of great value in helping *to sell related items*, such as supplies and accessory equipment. Leases often contain clauses stipulating the use of certain supplies which can be obtained only from the lessor. The authors have in mind a manufacturer of expensive typewriters who claims that the use of ribbons other than those provided by his company damage certain parts of the machine. Regardless of whether such claims are true or not, the effect is to make owners of that machine afraid to use cheaper ribbons. If the machines were leased the lessor would require that his ribbons be used. It should be noted, however, that some lessor companies have been enjoined from requiring lessees to purchase supplies from them alone. However, there would seem to be no objection to require

the use of such parts and supplies as will not damage a leased machine, and if such supplies are obtainable only from the lessor, the objective is accomplished.⁸ Even when necessary parts and supplies can be obtained from other sources, a lessor has an inherent advantage over the outright seller, arising from his continued relationship with the user and from the tendency of the user to feel that the lessor's supplies are designed to give maximum performance on the machine that he manufactures.⁹

The market for a machine is limited to those potential users who have sufficient resources to purchase or whose credit standing is such as to permit them to borrow; in either case, the potential buyer must consider the effect of the proposed investment in machinery upon his working capital position. Every investment in a fixed asset reduces the quantity of working capital available, or if the machine is purchased on credit, decreases the ability of the concern to borrow working capital. The leasing of a fixed asset has a similar effect, but only to the extent of the annual rental. There are more concerns that can afford to reduce their working capital or their borrowing ability by the amount of an annual rental charge than there are those that can afford to reduce them by the purchase price of the machines they use. That is to say, the *market for leasing a given machine is wider* than it is for selling that same machine.

The ability of a vendor to induce customers to lease rather than to purchase equipment is obviously greater

⁸ The lessee must be left free to purchase a satisfactory part or supply from anyone able to provide it. That is to say, the restriction must relate to the characteristics of the object and must be reasonable; it may not specify the source of supply.

⁹ The user of a machine might feel the same way about parts provided by an outright seller of a machine, but in the case of an outright sale the relationship of the vendor and the user is not necessarily continuous.

when that vendor enjoys a preferred competitive position. Some well-known companies which follow a policy of leasing enjoy a strong position because of patents. Product superiority not covered by patents, but maintained by a succession of improvements, would give a vendor the same preferred competitive position as that held by the makers of patented products. In either case the vendor would be enabled to overcome the traditional consumer preference for purchase.

SUMMARY

One point should be emphasized, namely, that if a typical leasing situation implies a certain set of favorable circumstances, there is no one typical leasing situation. Actually, a study of the various instances in which leasing has been used suggests that there are numerous situations in which a lease may be considered. No one circumstance need be present in any particular situation for the lease to be advantageous. Furthermore, a given characteristic may in one situation strongly favor the lease as against outright sale, but in another situation this same characteristic may not have any great bearing on the desirability of a leasing policy. For example, the necessity of a high capital outlay may constitute an important reason for the leasing of equipment to firms with limited financial resources. However, when financial resources are not limited, buyers of expensive equipment may prefer to purchase outright rather than to lease. Furthermore, the need for adequate servicing of equipment is often an important reason for leasing when users are unable or unwilling to perform the service themselves. However, users of large amounts of equipment often find it economical to service the equipment themselves so that no particular advantage in servicing accrues to them from following a policy of leasing.

A rise in the price level increases the amount of working capital needed to finance a given volume of goods turnover. When, as in 1945 and 1946, it becomes necessary for large department stores and mail order houses to obtain additional funds to finance day-to-day operations, it is possible for them to sell their buildings to the insurance companies under lease-back contracts and devote the proceeds of the sales to financing their higher-priced inventories. A rise in the price level affects the working capital needs of small enterprises in the same way as it does those of large companies. But small business enterprises have long complained of the unavailability to them of credit resources that are readily available to larger concerns. For example, insurance companies will not buy and lease back the buildings of small manufacturers. But by leasing rather than purchasing machinery, these small manufacturers can obtain the additional working capital needed.

In other words, instead of stressing the lease as advantageous only under a certain set of circumstances, the lease should be viewed by management as a financing and marketing device fitting diverse situations. It is the purpose of this monograph to explore the diverse situations in which a lease may be used to advantage by both the buyer and the seller. It may well be that this device is not being used to full advantage. In any event, it is apparent that the concept of a typical leasing situation is valuable insofar as it aids the individual buyer or seller to determine the merits of the lease for his own particular buying or selling program.

Chapter II

LEGAL CHARACTERISTICS OF TRANSFER ARRANGEMENTS

As explained in Chapter I, a fixed asset should be thought of as a bundle-of-services, one useable in the current accounting period and the remainder useable only in future accounting periods. As time passes, the cost of each of the services in the bundle will become a cost of operations of the particular period in which the service is used. Since all services of a bundle except one represent future costs of operation, it becomes clear that what accountants call fixed assets might properly be called prepaid expenses.

It is axiomatic that one's philosophical concept of legal ownership depends upon one's concept of an asset. For example, if one visualizes a building as a structure, then it is logical to think of ownership as holding the legal title to the land upon which the building stands. But when one visualizes a building as a bundle-of-services, he becomes appreciative of the fact that the *value* of what he owns *is derived from the value of, and the number of services renderable by*, the property, and not from its physical characteristics.

Obviously the *services* of land, buildings, and machinery are essential to most productive activity. Scarcely anyone would be inclined to question the truth of this statement. Nevertheless many businessmen act on the assumption that the *ownership* of land, buildings, and machinery is essential. The implication is that one who proposes to engage in production must possess land,

buildings, and machinery; whereas the truth is that their *services*, not their possession, is essential to the productive process.

DEFINITION OF A LEASE

One who clings to the structure-concept of a building would define a lease as a contractual arrangement by means of which the use of a fixed asset is transferred for a restricted period by its owner to a potential user, while its title is retained by the former. In such an arrangement it is customary to refer to the owner as a "lessor" and to the user as a "lessee." If one holds the bundle-of-services concept of assets, the definition of a lease is much simpler. In such a case a lease is merely *a contract for the outright sale of the currently useable service*. The resulting arrangement is a "one period" lease. If the owner also agrees to sell the future services as they become currently useable, the arrangement may be called a "periodically renewable" lease.

DEFINITION OF A SALE

One who purchases a fixed asset in *fee simple*, is in reality merely acquiring ownership of all the future services renderable by the asset. Presumably the price paid is based upon his *estimate* of the number of services included in the bundle. Whenever an estimate is involved, there is a possibility of an error in judgment. A machine with an estimated life of ten years may have an *actual* life of more or less than ten years. The purchaser is gambling on the correctness of his estimate: he has a chance for a profit and a chance for a loss.

The purchase price of a fixed asset also involves a guess as to the future *value* of the services in the bundle. Even though the services of a particular machine may be essential to the productive processes of today, a new inven-

tion may destroy their usefulness tomorrow. This is the *obsolescence risk*. It is borne, of course, by the legal owner of the fixed asset.

And, as emphasized earlier, the purchase price of a bundle of services is certain to be higher and to require the investment of a larger sum of money than the purchase price of any one service by itself. Whether or not one acquires all the services of a bundle more cheaply by purchasing them one at a time is a complicated calculation left for later discussion. As will be pointed out the *cost of owning* includes more costs than merely those of acquiring title.

OTHER TRANSFER ARRANGEMENTS

As has been seen, the lease and the outright sale are opposite extremes. There are at least four alternative procedures that lie between these extremes. For the most part each of these alternatives consists of an arrangement that is basically a sale or a lease with a slight modification.

The credit sale. As mentioned, an outright purchase of a fixed asset involves a larger investment of funds than does a leasing. This disadvantage of ownership is sometimes circumvented by a credit purchase of the fixed asset. In such a transaction the purchaser receives title to all the future services merely by making a down payment, (which may be as low as the lease payment), and promising to make a future payment. The promise has the legal status of a general claim against all of the property of the purchaser; that is to say, in case of default, the seller's position is no more secure than that of any other general creditor.

It will be noted that the credit sale arrangement circumvents only one of the disadvantages of ownership. The purchaser is still subject to the risk that he did not estimate the life of the asset, i.e., the number of services,

correctly and to the risk that future services of the asset will be worth less than the amount he has agreed to pay, namely, the obsolescence risk.

The installment credit sale. The buyer's obligation to pay in a credit sale may take the form of a series of promises maturing periodically, in which case the arrangement is said to be an installment credit sale. It will be noted that this arrangement is the same as the credit sale except in the systematic arrangement of payments. If the buyer miscalculates the life of the asset or if the asset becomes obsolete, the buyer is still obligated to continue the payments.

The secured credit sale. One of the difficulties of the ordinary credit sale, from the point of view of the seller, is that his claim against the buyer in case of default is merely a general claim of an unsecured creditor. Thus he may sell a \$50,000 machine in January for \$10,000 down and a \$40,000 note. If the purchaser goes bankrupt the following September he may be forced to take a \$20,000 settlement of the note. He could have avoided this result by taking a chattel mortgage for \$40,000 on the machine. By this arrangement he would have a prior claim to the machine in addition to a general claim on other assets possessed by the purchaser. But it will be noted that a secured credit sale arrangement does not affect the purchaser's assumption of the risks inherent in outright ownership of assets.

The conditional sale. A seller of machinery can secure his claim against a buyer by a conditional sales arrangement. This arrangement transfers possession of a machine to the user for a cash payment and a promise of future payments, but delays the *transfer of title* until the last installment payment has been made. By this simple shift from the chattel mortgage arrangement, the seller alters his legal position radically. He maintains a preferred

claim against the machinery sold, but he forfeits no general claim against the other assets of the purchaser. At the same time he simplifies the legal procedure required to protect himself in case of default. Since title to the property has never passed, he has only to take such legal steps as would be required to recover possession of his own property. By contrast the holder of a chattel mortgage must foreclose; that is, seize and sell the mortgaged assets with permission of the court, and then take only such portion of the proceeds as are still due on the debt.

The conditional sale is often held out to a potential purchaser as having all the advantages of a lease. Yet it will be noted that it circumvents only one disadvantage of outright ownership, namely, the investment of a large sum, and it makes this detour only by virtue of its installment payment feature rather than by any inherent characteristic of the conditional sales contract itself. Obviously, the conditional sales arrangement offers superior protection to the seller but it does not materially improve the buyer's position from that of any secured installment credit sales arrangement.

Although the conditional sale leaves the buyer in much the same legal position as any credit sale, nevertheless the conditional sales contract is only a short step away from the lease arrangement in form. The essential difference is that in the conditional sale, the original owner must transfer title if the required number of installment payments are made, whereas in the lease arrangement the original owner never parts with, and the user never acquires, title to the leased asset.

This slight legal distinction between the lease and the conditional sale is important for income tax purposes. If X Company acquires the use of a machine by promising to pay \$1,000 in five years, and if the machine is expected to last eight or nine years but be uneconomical

to use in, say, five years, one's income tax position *in the current year* is different according to whether the contract is a lease or a conditional sale.

If the same machine is acquired on the lease arrangement, the entire annual payment is deductible from income as a cost of operation. If the machine is acquired on a conditional sales arrangement, the annual payments represent a partial acquisition of title and only depreciation (\$555.55) is deductible as a cost of operation. At the end of five years the manufacturer using the leased machine will have paid out \$5,000, all of which will have been charged against income. The manufacturer buying on the conditional sales contract also will have dispersed \$5,000 for the machine, but he will have paid out an additional sum for income tax. He will now hold title to an obsolete machine with a book value of \$2,225. If the machine is really obsolete this \$2,225 may be charged against operations of the fifth year or spread over the next five years. If the machine is traded in on a new machine, its trade-in-value must be added to the cost of the new machine.¹

When a machine is leased, the user obtains no residual equity to services that may remain when the lease expires. Most businessmen do not like the idea of paying for a machine and then not owning anything when the lease expires. To cope with this objection some machine manufacturers have tried to write a contract in a form that is for tax purposes a lease, with a right to purchase attached. In general these attempts have not succeeded. Legally the sole difference between a lease and a condi-

¹ The reader is cautioned against over generalizing from this example. Our statement was that the tax position of the lessee *is different* from that of the buyer on a conditional sales contract. It does not follow necessarily that the tax position of the lessee is *better* than that of the conditional sales buyer. The problem of the tax advantage and disadvantage is discussed in a later chapter.

tional sale hinges not on the form of the contract but upon whether the user can cause the title to pass.

TYPES OF LEASE

A lease arrangement may call for the payment of periodic sums or it may require full payment in advance. In the latter event it is customary to allow interest on the prepayments. To illustrate, compare a five year lease calling for the payment at the beginning of each year of \$1,000 with a five year lease calling for advance payment. We will assume interest at the rate of 5 per cent compounded annually.

COMPUTATION OF COST OF FIVE-YEAR LEASE
(5 per cent interest rate)

Year	Amount of Rent	Interest Allowed for Prepayment	Cash Required
1	\$1,000.00	\$ 0.00	\$1,000.00
2	1,000.00	47.62	952.38
3	1,000.00	92.93	907.07
4	1,000.00	136.16	863.84
5	1,000.00	177.30	822.70
Total	\$5,000.00	\$454.01	\$4,545.99

Whether a manufacturer should pay \$1,000 at the beginning of each of five years or \$4,545.99 in a lump sum at the beginning of a five year period for the use of a facility, would be a matter of indifference provided he could invest idle funds at a 5 per cent rate. If he chose the annual payment scheme, he would pay out \$1,000 the first year and have \$4,000 left to invest. At the beginning of the second year he would pay out another \$1,000 and have \$3,000 plus one year's interest on the \$4,000 to invest. Over the five years his interest income would total \$454.01, so that the net amount paid on the lease would be \$4,545.99. If he could invest at a rate

higher than 5 per cent he would prefer the annual payment method: if the best rate obtainable should be less than 5 per cent, he would prefer the prepaid lease.

In the above arrangement the amount to be paid was a specific sum and applied to time periods: in the first case \$1,000 was to be paid each year, in the second case the discounted value of \$5,000 was to be paid at the beginning of the five year period. It is possible, however, to make another lease arrangement in which the amount of the annual payment is not set as a definite sum, but is dependent upon the amount of use which the machine is given. For example, if the machine is going to be used to make cement blocks, the amount of rent might be based upon the number of blocks manufactured.

SUMMARY

Outright ownership of a fixed asset means ownership of all the services that the asset will ever render. The *number* of renderable services is almost always uncertain. Hence a purchaser of a fixed asset is purchasing an uncertain number of services and so is assuming a risk of paying for non-existent services. Only the value of a *current* service can be estimated with any degree of accuracy. Consequently, the outright purchaser of a fixed asset is gambling on the value of the more remote services. To purchase at once all the services renderable by a fixed asset involves the investment or tying-up of a larger sum of capital than does the purchase of each service as it is used. To the cost of owning should be charged the loss on the capital so frozen. To compensate for this loss of earnings it is customary for lessors to allow interest on prepayments, but the discount allowed in such cases is more apt to coincide with market rates of interest on safe investments than it is to coincide with the rate of earnings actually forfeited by the lessee on a prepaid lease.

The principal difference between a prepaid lease and outright ownership is that in the former the lessor discounts a specific number of services, whereas in the latter the purchaser discounts all the services.

In general, one comparing the advantages of ownership as against leasing, should consider the loss of earnings in investment and the risks inherent in ownership.

Chapter III

THE MOST PROFITABLE USE OF FUNDS

Business enterprises differ in many respects. Some provide society with raw materials. Others convert raw materials into finished products, while still others transport and distribute the final products to consumers. Some companies are large; others are small. Some are organized as corporations and others operate as partnerships or sole proprietorships. Almost all companies require the use of some land, buildings, machinery, labor, and material; but the amount and type of land, buildings, machinery, labor, and materials required by one company differs radically from that required by another.

THE NATURE OF BUSINESS ACTIVITY

In spite of these many differences, there is one aspect of operations in which all enterprises are identical. Every business enterprise, regardless of the nature of its activities or the form of its organization, *pays out funds* in a manner which, it is hoped, will lead to a *subsequent recovery with profit*. In "expend-and-recover-with-profit" is to be found the entire story of business.

A merchant pays out cash, or promises to do so, in order to acquire merchandise, stock, and clerical help. He anticipates recovering his expenditures via sales to customers. His activity is not essentially different from that of the manufacturer who pays out funds for labor, material, and services of other enterprises, to be incorporated in a finished product the sale of which, it is hoped, will result in the recovery of the expenditures with profit. Even transportation companies pay out funds

for labor and equipment designed to provide services that can be sold to the public for cash.

The "pay-out-take-in" nature of business activity is very clear when a business activity involving a single expenditure is analyzed. Take, for example, the case of a man who pays \$2,000 for a city lot which he immediately sells for \$2,650. It is not difficult to see that the \$2,000 expenditure was made for the purpose of inducing the subsequent receipt of \$2,650, or that the motive behind the deal was the \$650 profit. When several expenditures are made to induce a single receipt or when a series of expenditures are made to insure a series of receipts, the procedure is basically similar, although the inherent simplicity is not quite so apparent.

One other type of complexity is frequently introduced. A company sometimes finds it necessary to expend a single large sum for the purpose of inducing a series of future receipts. In such cases it is difficult to trace each dollar of the expended sum. But even when a given expenditure can not be traced directly to a specific receipt, it is still true that the expenditures were made for the purpose of recovering them with a profit.

AN INITIAL FUND ESSENTIAL

The necessity of making expenditures requires the establishment of an initial fund of cash. This initial fund originates from the investments of the proprietary group and is augmented by loans from creditors. The requisite size of the initial fund depends upon, first, the aggregate expenditures to be made, and second, the average length of time required to recover expenditures. For example, if a total of \$100,000 is to be expended during a year, and if funds will be recovered on the average in six months, then an initial fund of \$50,000 will be sufficient, since each dollar can be expended twice a year.

When an enterprise expends funds, something of value usually comes into its possession. That something may be a *tangible object* such as a building or a machine, or it may merely be a *right* to a service, as when labor is paid for in advance. In either case the accountant records the thing acquired as an asset with a value equal to its cost of acquisition. An earlier chapter stressed the importance of viewing such assets as bundles-of-services. Since the object of business activity is to recover expended funds, what one holds in the interim between the expenditure and the recovery is unimportant except as it affects the recovery itself.

TYPES OF EXPENDITURE

A portion of the initial fund of an enterprise is normally expended in the acquisition of what an accountant calls *fixed* assets; i.e.,—land, buildings, and machinery. As explained, each of these assets is in reality a bundle-of-services only one of which is useable in the current accounting period. Thus an expenditure for a fixed asset might well be divided into, first, the portion to be recovered currently, and second, the portion to be recovered in the future. The conventional accounting method merely records such an expenditure as a purchase of a fixed asset. Thus, if \$98,000 is expended for land, buildings, and machinery, the conventional method would show the following:

<i>Fixed Assets</i>	
Land	\$ 8,000
Building	40,000
Machinery	50,000
	<hr/>
	\$98,000

Since land endures forever, it is impossible to allocate the \$8,000 expenditure to the operations of any one accounting period. Sums expended for land are not normally recovered until the affairs of the enterprise are

brought to an end. If the building is assumed to have an estimated life of 20 years then it follows that the \$40,000 expenditure is, in reality, an expenditure of \$2,000 for services to be used in the current year, and a prepayment of \$38,000 for services to be used in future years. In calling the \$38,000 item a prepaid expense, the question of the advisability of a policy of prepaying expenses is raised immediately. If the expenditure is called a fixed asset the question is not raised. If the machinery is assumed to have a life of, say, ten years, then the \$50,000 expenditure listed as "machinery" might properly be recorded as a \$5,000 payment of expenses and a \$45,000 prepayment of future expenses.

Some of the initial fund will be expended for raw materials, labor, and miscellaneous purchased utilities such as heat, power, government services, and the like. All such expenditures are normally recovered in the same accounting period in which they are expended. The material objects acquired by such expenditures are therefore called current assets. If we assume our hypothetical company to have \$52,000 of current assets, the conventional balance sheet would appear as follows:

BALANCE SHEET OF THE HYPOTHETICAL MANUFACTURING CO.
AS OF THE BEGINNING OF THE YEAR

<i>Assets</i>			<i>Liabilities</i>		
<i>Fixed assets</i>			<i>Credits</i>		
Land	\$ 8,000		Accounts payable	\$ 8,500	
Buildings	40,000		Notes payable	14,500	\$23,000
Machinery	50,000	\$98,000			
<i>Current assets</i>			<i>Proprietary</i>		
Cash	15,000		Capital stock	100,000	
Inventories	17,000		Retained earnings	27,000	127,000
Receivables	20,000	52,000			
		<u>\$150,000</u>			<u>\$150,000</u>

The accuracy of this presentation cannot be questioned. However the following rearrangement of the asset items is more revealing as to what is expected to occur.

REARRANGEMENT OF ASSET SIDE OF BALANCE SHEET

Funds expended as prepayments of future operations

An infinite number of land usages	\$ 8,000
19 years of building usage	38,000
9 years of machine services	45,000

Total funds not available for current use	<u>\$91,000</u>
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Funds available (or already expended) for current operations

Cash (available)	\$15,000
Inventories (already expended)	17,000
Receivables (in process of collection)	20,000
One year building service (paid for)	2,000
One year machine service (paid for)	5,000

Funds devoted to financing current operations	<u>59,000</u>
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\$150,000

SIGNIFICANCE OF ABOVE RECLASSIFICATION

A single glance at the above arrangement emphasizes an important fact not revealed by the more conventional presentation. The management of this company is devoting \$91,000 to prepaying the expenses of future periods and \$59,000 to financing current operations. Suppose that at the end of the year the profits amount to \$15,000. Then the company will have recovered \$15,000 more from its customers than it expended to acquire the products or services it delivered to them. These customers paid funds to the company in order to obtain its products or services. They did not surrender their funds because the company's management prepaid some of its future

costs of operation. That is to say only the funds invested in current services produce current income.

The management of the company is probably of an opinion that the company's assets earned ten per cent: i.e.,— $\$15,000 \div \$150,000$. Such an opinion could easily lead to disastrous decisions. It might lead, for example, to a conclusion that \$20,000 of additional funds would increase earnings by \$2,000. Actually, \$59,000 of the company's funds earned 25 per cent ($\$15,000 \div \$59,000$); and \$91,000 of its funds earned nothing, since they were used to prepay future operating expenses. Thus if \$20,000 of new funds were employed to prepay future expenses, the current income of the next period would be affected but slightly. But if the new funds were employed in current operations, they might well increase income by \$5,000. It would appear therefore that the rule for the maximization of income would be to maximize funds invested in current operations and to minimize prepayments of future cost of operations.

FIXED ASSETS NECESSARY EVILS

Obviously it is necessary for most companies to prepay some of their future costs in order to have any current operations. The use of a building is essential. If use of such a building can be obtained only by buying it, then it is *necessary* to have \$38,000 lie idle just in order to make it possible for current funds to work. But the fact that some prepayments are essential should *not* be interpreted to mean that such prepayments are also desirable. And when fixed assets can be acquired by other means, management should consider the relative costs of the alternatives.

Consider, for example, the cost of owning land in the above situation. In order to hold title to the land it was necessary to expend \$8,000. These funds are not to be

recovered until the company is liquidated. No part of this expenditure will appear as a cost of operation in the current or in any future accounting period since land is not depreciated. Nevertheless, in order to own the land, the company was deprived of investing \$8,000 in current operations at a profit of 25 per cent. If the use of the land could have been obtained by paying, say, \$1,000 per year, then the \$7,000 released might have been used as working capital to earn \$1,750.

The same reasoning applies to investment in buildings. Some \$40,000 was paid for buildings in the above illustration. Only \$2,000 of this sum represented a service used in the first year. All funds expended in current operations were recovered with a 25 per cent profit. The \$38,000 expended to prepay building services earned nothing. Had it been possible to lease the building at an annual rental of, say, \$3,000, then \$35,000 of funds would have been freed to finance current operations, presumably at a 25 per cent profit.

Cost figures submitted by the accountant in this instance would be misleading. According to accounting principles, the cost of using an owned building would appear to be \$2,000; the cost of using a leased building would appear to be \$3,000. Actually, however, in order to own, it was necessary to forego \$8,750 of profits (25 per cent on \$35,000) so that correct comparative figures would be \$3,000 to lease and \$10,750 to own.

SUMMARY OF THE ARGUMENT

Production requires the use rather than the ownership of fixed assets. To own fixed assets means that one has paid in advance for all the future services of the asset, only one of which can be used in the current period. Included in the cost of owning should be the profits foregone on the dollars used to prepay future service costs.

Therefore, in comparing the cost of leasing with the cost of owning, one should add the foregone profits to the cost of owning or deduct them from the cost of leasing in order to make the two cost figures comparable.

The Most Profitable Earning Rate. For many business enterprises, the most profitable use of funds is in the financing of current operations. This fact is not as obvious as it should be, due to the custom of comparing net income with gross investment. For example, a businessman sells an item costing \$1.00 for \$1.05. The profit is only five cents. But, if the time intervening between the expenditure of the dollar and its recovery with five cents profit is only one month, the merchant can repeat the transaction twelve times in the course of a year. Thus the rate of profit from the expenditure and recovery of the dollar is twelve times 5 per cent or 60 per cent on an annual basis. However, if the merchant's ratio of fixed assets to working capital funds is five to one, his 60 per cent earning rate will be watered down to 10 per cent on total investment.

At the beginning of 1949 the balance sheet of the Studebaker Corporation showed total assets of \$129,030,000 devoted to the following purpose:

Prepayment of future expenses	\$33,945,000
Invested in marketable securities	10,062,000
Available for current operations	85,023,000
	<hr/>
	\$129,030,000

Its ratio of current funds to total fixed assets was 1 to 1.4. During the year the company earned \$46,382,000 before payment of interest and income taxes, but \$587,000 of the sum was other income, presumably from investments. If we attribute the operating profits to the funds devoted to current operations we find that the company earned 54.4 per cent on such funds in that

year. But this favorable earning rate is reduced to 38.6 per cent if operating earnings are attributed to total investment in fixed and current assets. The profitableness of the use of funds in financing Studebaker's current operations and the effect of spreading the earnings over prepayment is brought out in the following table:

TABLE I
RETURNS ON STUDEBAKER CORPORATION'S
INVESTED FUNDS

Year	Per Cent Returns on Funds Devoted to Current Operations	Per Cent Returns on Total Funds
1947	26.2	19.5
1948	45.4	34.2
1949	54.4	35.9

Obviously the average rate of return on investment is reduced as the proportion of total funds devoted to prepaying future costs of operations is increased. This is brought out by the following table:

TABLE II
RELATION OF RETURN PER DOLLAR OF TOTAL INVESTMENT
AS PROPORTION OF PREPAYMENT INCREASES

Assumed Per Cent of Earnings on Current Funds	Assumed Per Cent of Total Assets that are Current	Per Cent of Earnings on Total Investment
40	100	40
40	80	32
40	60	24
40	40	16
40	20	8
40	10	4

The formula for showing the ratio is:

$$\text{Rate Earned on Current Funds} \times \frac{\text{Current Assets}}{\text{Total Assets}} = \frac{\text{Rate Earned on Total Investment}}{\text{Total Investment}}$$

When all assets are current the second quantity of the formula will be one and the rate earned on total investment will be the same as that on current funds.

SOME SIGNIFICANT MATHEMATICAL RELATIONSHIPS

The following somewhat obvious mathematical relationships will aid a financial manager to understand the theory involved in the earlier argument. If all costs of operations other than that of financing are included in the term "cost of goods delivered," then:

$$\text{Sales} - \text{Cost of Goods Delivered} = \text{Margin of Net Profit}$$

Margin of Net Profit can be stated in dollars or as a percentage of Cost of Goods Delivered. The latter has more significance, since it indicates *how much profit accrues to the firm from each expenditure*. For example, if the figure is .23 it means that each dollar expended is customarily recovered with 23 cents profit. The formula for computing working capital turnover is as follows:

$$\text{Cost of Goods Delivered} \div \text{Working Capital} = \text{Turnover}$$

Working Capital, as used in this formula, includes the average cash balance, the typical inventories and receivables, and all prepaid items (such as depreciation) that apply to the current period. This is the sum of the funds available or already expended for current operations described earlier. The following formula is most significant:

$$\text{Margin of Profit} \times \text{Turnover} = \frac{\text{Rate Earned on Working Capital Investment}}$$

The effect on earning rates of prepaying future costs of operations, that is to say of owning fixed assets, is brought out by the following formula:

$$\frac{\text{Rate Earned on Working Capital Investment}}{\times} \frac{\text{Working Capital Assets}}{\text{Total Assets}} = \frac{\text{Rate Earned on Total Investment}}{\text{Total Investment}}$$

Obviously the rate earned on total investment declines proportionally to an increase in the total asset figures.

SOME TYPICAL EARNING RATES

Sixty companies were chosen at random. The assets as of January 1, 1949 were classified as fixed, current, and miscellaneous investments. The last of these was dropped. An amount equal to 1949 depreciation was deducted from the fixed assets and added to current assets. Then the profits before taxes and interest (with income from investments deducted) was attributed to the current assets as corrected.

TABLE III

PER CENT EARNED ON WORKING CAPITAL IN 1949

Earning Rate Percentage	No. of Companies
Negative	3
0 to 9.9	7
10 to 14.9	9
15 to 19.9	15
20 to 24.9	8
25 to 29.9	6
30 to 39.9	8
40 to 49.9	2
Over 50	2

Chapter IV

THE COST OF LEASING

The discussion in this chapter assumes that the use of a specific building (or machine) is available on an annual rental basis of \$12,000, payable on January first. The discussion also assumes that the most profitable rate of return from an alternative investment of funds is 5 per cent. On the basis of these two assumptions, it attempts an explanation of the mathematical procedure for calculating the *maximum amount* that a user can afford to pay for a five year prepaid lease, and for the outright ownership of the fixed asset.

To understand these calculations it is necessary for the reader to conceive of the building (or machine) as a bundle-of-services rather than as a physical object. For purposes of identification each service in the bundle-of-services is labeled as service "a," service "b," and so on. It is further assumed that services "a" through "e" are practically certain to be useable, but that the useability of each successive service beyond "e" become increasingly questionable. These assumptions are in accord with the discussion of previous chapters.

It may be argued that businessmen do not make computations such as are described. This is admitted; they guess at them. And the outcome is good or bad according as the guesses agree or fail to agree with the calculations. However, it should be pointed out that the businessman's record for accurate guessing is high, which means that precise mathematical calculations do coincide closely with actual business procedure.

ANNUAL RENTAL CALCULATIONS

If an enterpriser elects to rent on an annual basis, his cost computation is relatively simple. He will expend \$12,000 on the first day of the year. This expenditure will be charged by him to costs of operation for that year. Presumably, current costs will be recovered from customers during the course of the year. That is to say, \$1,000 of the receipts of each month will be treated as a partial recovery of the beginning-of-the-year \$12,000 rent expenditure. The following table summarizes the situation.

TABLE I

Date	Amount Expended	Amount Recovered (Cumulative)	Average Amount Invested During Month
January 1	\$12,000	\$ 0	\$11,500
February 1	0	1,000	10,500
March 1	0	2,000	9,500
April 1	0	3,000	8,500
May 1	0	4,000	7,500
June 1	0	5,000	6,500
July 1	0	6,000	5,500
August 1	0	7,000	4,500
September 1	0	8,000	3,500
October 1	0	9,000	2,500
November 1	0	10,000	1,500
December 1	0	11,000	500
December 31	..	12,000	..
Totals	\$12,000	\$12,000	\$72,000

The firm will pay out \$12,000 in cash on January 1. This expenditure will effectively deprive the firm of any alternative use of this amount of funds. During the course of the month the firm will recover \$1,000 from its customers, so that on February 1 only \$11,000 of the expended funds will still be unavailable. By the middle of January it will have recovered \$500 (half the month's total recovery) of its rent expenditure, so that as of this date, \$11,500 will still be invested in prepaid rent. Prior

to January 15 it will have *more* than \$11,500 and after January 15 it will have *less* than \$11,500 invested in prepaid rent. Hence, the average investment in prepaid rent during the month will be \$11,500. The same method of computation will show the average investment in prepaid rent for the year to be \$6,000. (An average of the monthly averages) .

PREPAID RENTAL CALCULATIONS

The procedure for determining the value of a five-year prepaid lease is more complicated. It requires the calculation of the cost of each year's service separately. This means that we must compute the maximum amount which an enterpriser can afford to pay for each service, *considering the alternatives available to him*. Thus we must know what an enterpriser can do with funds not tied up in rent prepayments, that is to say, we must know or assume a rate of return that would be earned if the funds were not used to prepay rent. Obviously, we are interested in the most *profitable alternative* use of the funds, for it is this most profitable alternative use that the renter gives up in order to prepay his rent. For purposes of illustration, the most profitable alternative rate has been assumed to be 5 per cent per annum.

Service "a". If an asset is rented on an annual renewable lease arrangement, the lessee is obligated to pay \$12,000 on January 1. As explained above, this obligation deprives him of the use of \$6,000, *on the average*, over the year. Under a five-year lease the lessee could also afford to pay \$12,000 for service "a," but no more. Thus the maximum price that a lessee can afford to pay for service "a" is the same under a five-year as it would be under an annual rental arrangement.

Service "b". Under the annual lease arrangement, no funds will be expended for service "b" until the first day

of the second year. Under a five-year prepaid contract, funds will be expended for service "b" on the first day of the *first* year. Hence, the enterprise will be deprived of the most profitable alternative use of these funds throughout the first year. The present value of \$12,000 a year from now at 5 per cent interest is \$11,428.56. It is a matter of indifference to the enterprise whether it pays \$11,428.56 for service "b" *now* and gives up the alternative use of the funds, or invests \$11,428.56 at 5 per cent for a year and then uses the funds plus the interest earned, \$571.44, to purchase service "b" on January 1 of the second year for \$12,000. That is to say, a lessee can afford to prepay service "b" only if its cost is reduced by an amount equal to the interest that is lost as a result of the prepayment. Stated differently, \$11,428.56 is the maximum price an enterpriser can afford to pay for service "b" a year prior to its use.

Services "c", "d", and "e". The maximum amount which an enterpriser could afford to pay for services "c", "d," and "e," would be computed in a manner similar to that used in computing the value of service "b". The results of such a computation are tabulated in Table II.

TABLE II

Service	Present Value
"a"	\$12,000.00
"b"	11,428.56
"c"	10,884.36
"d"	10,366.08
"e"	9,872.40
Total	<hr/> \$54,551.40

As can be seen, it is a matter of indifference to an enterpriser whether he pays \$12,000 each year under an annual renewable lease, or \$54,551.40 in lump sum as prepayment of all five services. This conclusion is valid, of course, only when the most profitable alternative use of funds nets 5 per cent.

MAXIMUM PURCHASE PRICE

Up to this point, the discussion has been concerned only with the choice between an annual renewable lease and a five-year prepaid lease. In both cases, the enterpriser secured the *use* but not the *title* to the asset. Suppose now that the manager is weighing the advisability of purchasing the asset outright. If he does this, he will obtain the same five services mentioned above plus all rights to any residual services that may result.

Obviously, if the asset will render five and *only five* services, the enterpriser cannot afford to pay more for its ownership than he can afford to pay on a five year lease. In such a case the lease would give him five services; ownership would not do more. However, it is possible that the asset would still have value to some other enterprise after the lessee has used up the five services. Thus, in order to compute the purchase price of the building, the lessee must estimate its salvage value at the end of the fifth year. Suppose the salvage value is estimated to be \$12,000. The problem then becomes that of figuring how much the purchaser can afford to pay now for a right to recover \$12,000 of salvage value at the end of five years. As we have seen, the present value of \$12,000, recoverable at the end of a five-year period, is \$9,402.36 when the interest rate is 5 per cent. In other words, if an enterprise pays \$9,402.36 for the right to a \$12,000 salvage value, its profit of \$2,597.64 on the transaction would be exactly equal to the interest the enterprise would have earned on a \$9,402.36 investment.

Thus, an enterpriser could afford to pay \$63,953.76 for ownership of the asset on the basis of the assumptions stated. This sum is the value of the five-year lease (\$54,551.40) plus the present value (\$9,402.36) of salvage expectations (\$12,000).

The enterpriser may feel certain that the asset will render five services and expect that it will render three additional services. If he feels that service "f", "g", and "h" are *certain*, their present values would be:

Service "f"	\$9,402.36
Service "g"	8,954.64
Service "h"	8,528.04
	<hr/>
	\$26,885.04

If the enterpriser is not certain that the asset will be able to render services "f", "g", and "h", to calculate their present values he must introduce probabilities. Suppose he feels the odds to be about one in two that service "f" will be useable, one in three that service "g" will be useable, and one in five that service "h" will be useable. The present values of these three services would therefore be computed as follows:

Service "f"	\$9,402.36	$\times 1/2 =$	\$ 4,701.18
Service "g"	8,954.64	$\times 1/3 =$	2,984.88
Service "h"	8,528.04	$\times 1/5 =$	1,705.61
			<hr/>
			\$ 9,391.67
Present value of services "a" to "e"			54,551.40
			<hr/>
Maximum purchase value of services "a" to "h"			\$63,943.07

The reader may object that this computation makes the purchase of a building appear like betting on a horse race. The authors have no objection to such a criticism. One who purchases a building is *simply acquiring future services which he is paying for now*. Obviously, this is a risky proposition. There is always a chance that a 1959-service, purchased in 1951, will not be useable in 1959, or, if useable, may not be worth the original estimate. Of course, there is also a chance that the 1959-service may be more essential or of more value in 1959 than is now expected. *Ownership* of fixed assets means speculating on the future.

It may be objected that one who leases fixed assets under a long-term lease assumes the identical risks that are assumed by one who purchases the assets outright. For example, the signer of a twenty-year lease runs the same risk as an outright purchaser that the twentieth service of the series may prove to be unuseable, or, if useable, may not be worth what the user has agreed to pay for it. There is a measure of truth in this argument but it should be pointed out that when circumstances change radically (and adversely to the lessee) it is frequently possible to re-negotiate the terms of a lease contract. A re-negotiation of a past sale is not possible, however, for the vendor has been paid and has no reason to refund a part of the original purchase price.¹ Furthermore, as will be pointed out later, a lessee of machinery is relieved of certain obsolescence risks which an owner must necessarily bear.

THE IMPORTANCE OF THE MOST PROFITABLE ALTERNATIVE RATE OF RETURN

It will have been evident from the above discussion that the most profitable alternative use of capital played an important part in determining the maximum amount that one could afford to pay for the outright purchase of facilities, or for a long-term lease of facilities that are also available on an annual renewable basis. It will also be evident that the basis of calculation must always include a comparison of the cost of obtaining facilities by one method with the cost of obtaining them by that method which involves the *least amount of initial expenditure*. In the previous illustrations the method involv-

¹ If the lessee attempts to escape the risks of a long-term agreement by leasing for a short period, he then assumes the risk of being dispossessed or of being forced to pay higher rentals. In the case of machinery leases, this risk is usually circumvented by the short-term lease renewable at the option of the lessee.

ing the least amount of initial expenditure was the annual lease. Thus, all computations compared the maximum amount that an enterpriser could afford to pay for a long-term lease or an outright purchase with the cost of the annual renewable lease.

Discussions thus far have assumed that a 5 per cent rate of return constitutes the most profitable alternative use of funds available to an enterpriser. An assumption of a higher or a lower rate of return would have radically altered the values obtained for a five-year lease and for outright purchase. The effect of a change in this assumption is indicated by Table III.

TABLE III

Assumed Percentage Rate of Return	Maximum Amount One Could Afford to Pay for—	
	5 Year Prepaid Lease ¹	Outright Purchase ²
0	\$60,000.00	\$72,000.00
2½	57,143.64	67,749.84
5	54,551.40	63,953.76
7½	52,191.84	60,550.56
10	50,037.60	57,488.40

¹ Assuming the annual renewable lease is available at \$12,000.

² Assuming \$12,000 salvage value.

A question is raised as to which rate is most appropriate for use in computing the value of a prepaid lease or outright ownership. As suggested, the rate should be the *most profitable* rate of return at which the funds expended in prepaying future costs of operations could have been invested otherwise. The possible alternatives are three:

- (1) Funds may be used to prepay a lease or to acquire title to property through outright purchase
OR
- (2) The funds may be invested in marketable securities or in U.S. Bonds
OR
- (3) The funds may be employed to finance an expansion of current operations of the firm.

The annual rate of return on (2) above will vary from one to possibly twelve per cent. The discussion in Chapter III suggested that the rate of return from (3) if computed properly might run as high as 50 or 74 per cent annually. In other words the most profitable alternative rate of return *for those industries whose current operations can stand expansion*, is the rate of return which those companies are earning on their own working assets. In most cases, the use of *this* rate in the formula will indicate that the firm cannot afford to purchase fixed assets *if* their use can be obtained on an annual lease arrangement.

ILLUSTRATIVE PROBLEM

Assume that several businessmen have a capital of \$100,000, this sum being the only capital available to them from any source. Assume further that the group has an opportunity to engage in a business venture in which each dollar, up to \$100,000 expended for operating expenses, will be recovered within three months with a 20 per cent gross profit. Obviously, it will be necessary to house the productive activity of the group in a structure. Assume, therefore, that suitable quarters are available on a prepaid annual rental basis of \$6,000, renewable for five years. Assume also that the owner of the premises has indicated a willingness to rent the premises under a five-year prepaid rental contract, or to sell the property for cash if the managers wish to purchase. The problem is to determine how much the enterprisers can afford to pay for a five-year lease and what price if any it might be advisable for them to pay for ownership of the property. The basis of their computation will be the fact that use of the structure can be obtained on an annual renewable lease basis. The problem is simplified if we assume the useful life of the building to be five

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years and place its salvage value at the end of the five year period at \$6,000.

If all the initial capital funds were to be employed as circulating capital, the profit and loss statement of the enterprise would show the following:¹

Sales	\$480,000	(\$100,000 \times 1.20 \times 4)
Expenses	400,000	(\$100,000 expended 4 times)
Profit	\$ 80,000	

Thus, if each dollar of expenditure is recovered with 20 cents profit in three months, and if each dollar is expended four times during the year, the enterprise will earn 80 cents per year on each dollar. Apparently the most profitable alternative use of funds for this firm, then, is employment as circulating capital. Any other use of funds, such as the acquisition of fixed assets, involves foregoing an 80 per cent rate of return on funds so used. It will behoove our enterpriser, therefore, to elect the means of acquiring the necessary fixed assets which will result in the largest *average* balance of funds available for employment as working capital.

It is clear, however, that even under the annual lease arrangement, all of the initial fund of \$100,000 cannot be employed to purchase material and labor. As stated, \$6,000 must be paid out on January 1 to prepay the first year's rent, leaving but \$94,000 available to finance operations. However, a portion of January receipts will be treated as recoveries of direct expenditures to finance operations, \$500 of the receipts will be treated as recovery of the amount paid on the lease, and the balance will be set aside for distribution to the owners as assumed in the preceding footnote. Thus, funds available for financing current operations in February will be \$94,500; funds available in March will be \$95,000, and so on

¹ For simplicity assume that profits are withdrawn as soon as earned.

throughout the year. The *average* amount available to finance current operations during the year will therefore be \$97,000. Each of the five years will be a duplication of the first year. Table IV below summarizes the results of the annual renewable lease arrangement.

TABLE IV
FIVE YEARS OPERATION WHEN FACILITIES ARE
LEASED ON AN ANNUAL RENEWABLE BASIS

Service	Annual Rental Payment	Average Amount Unavailable as W. C.	Balance Available for W. C.	Annual Return, at 80 per cent
No. 1	\$6,000	\$3,000	\$97,000	\$77,600
No. 2	6,000	3,000	97,000	77,600
No. 3	6,000	3,000	97,000	77,600
No. 4	6,000	3,000	97,000	77,600
No. 5	6,000	3,000	97,000	77,600

Next, let us compute the maximum amount which the enterprise can afford to pay for a five-year prepaid lease in view of the fact that it can, if it chooses, secure the use of the essential facilities on an annual renewable lease arrangement. Under the annual renewable lease arrangement it must pay out \$6,000 at the beginning of the first year, but, as we have seen, this will mean depriving the enterprise (on the average) of only \$3,000 of working funds.

If the enterprise pays the second year's rent in advance it will lose a return of 80 per cent on the payment throughout the first year. Hence, prepayment of the second year's rent is advisable only if the enterprise can obtain an 80 per cent discount on the amount to be advanced. That is to say, it can only afford to pay \$3,333 for the second year's services. The value of the third, fourth, and fifth year's services computed in a similar manner are shown below.

TABLE V
MAXIMUM VALUE OF EACH OF FIVE
YEARS' SERVICES IF PAID IN ADVANCE

First Year	\$ 6,000.00
Second Year	3,333.33
Third Year	1,851.67
Fourth Year	1,028.86
Fifth Year	571.62
Total	\$12,785.48

If the enterprise should expend \$12,785.48 to prepay five years' rental it would have \$87,214.52 available for working capital purposes on January 1 of the first year. However, by treating \$500 of the inflowing funds of each month as rental recoveries, the *average* amount of funds available would be \$3,000 more than this sum. Table VI summarizes the result of five years of operations under the prepaid lease arrangement.

TABLE VI
FIVE YEARS' OPERATIONS WHEN FACILITIES
ARE LEASED ON A PREPAID BASIS

Service	5-Year Prepayment	Average Amount Unavailable as W. C.	Balance Available for Investment at 80 per cent	Return
No. 1	\$12,785.48	\$9,785.48	\$ 90,214.52	\$ 72,171.62
No. 2		3,785.48	96,214.52	76,971.62
No. 3		68.29	99,931.71	79,945.44
No. 4		0	100,000.00	80,000.00
No. 5		0	100,000.00	80,000.00
Total Earnings				\$389,088.68

The only difference between purchasing and renting on a prepaid basis in this case is that a purchase entitles the owner to a salvage value of \$6,000 at the end of the fifth year. Whatever amount the owner pays for this salvage value cannot be used as current capital, and so involves a loss of 80 per cent annual return. Therefore, acquisition of the salvage rights to \$6,000 is advisable only if they can be acquired at a discount sufficient to compensate the purchaser for the loss of an 80 per cent

annual return. This means that the present value of the right to recover \$6,000 at the end of the fifth year is only \$317.53. Thus, the maximum bid for ownership of enterprise would be computed as follows:

Value of five years' service (See Table V)	\$12,785.48
Value of salvage privileges	317.53

Maximum value of ownership	<u>\$13,103.01</u>
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Table VII below summarizes the profit situation from five years of operations under the ownership basis.

TABLE VII
FIVE YEARS' OPERATIONS WHEN FACILITIES ARE OWNED

Service	Purchase Price	Average Amount Unavailable as W. C.	Balance Available for W. C.	Return at 80 per cent
No. 1	\$13,103.01	\$10,103.01	\$ 89,896.99	\$ 71,917.59
No. 2		4,103.01	95,896.99	76,717.59
No. 3		1,568.31	98,431.69	78,745.35
No. 4		0	100,000.00	80,000.00
No. 5		0	100,000.00	80,000.00
Total Return				\$387,380.53
Add Profit from Sale of Building Over Book Value				1,200.00
				<u>\$388,580.53</u>

SUMMARY OF ILLUSTRATIVE CASE

The manager of the illustrative enterprise would conclude that insofar as cost factors are concerned, it is a matter of indifference to him whether he rents the needed facilities for \$6,000 per year, payable on January 1, prepays the rent for five years in a lump payment of \$12,785.48, or purchases the facilities outright for \$13,103.01. In all three cases the total net profit for the five years is approximately the same.² To state the matter

² The maximum difference, \$1,088.68 shown in the computations, is due to the dropping of fractional sums and to assumptions involved in accounting procedures. Percentagewise this difference is insignificant.

differently, a user of fixed assets *can afford to pay a very high annual rental to avoid a sterile investment in prepaid costs of operations* i.e., ownership or prepaid leases, *when his most profitable alternative rate of return is high.*

In the illustrative case, a snap judgement would probably have been to favor an outright purchase if the enterprise had been offered the option of renting for \$6,000 a year or purchasing for \$20,000. Yet, as we have seen, the loss of profits on \$20,000 invested in fixed assets would have destroyed all the advantage of ownership.

THE VIEW OF THE LESSOR OR SELLER

It is extremely doubtful that the original owner of facilities that could be rented on an annual basis for \$6,000 would be willing to sell, or to lease them on a prepaid basis, for any such figures as were suggested above. In some respects the problem of the owner or lessor is similar to that of the user; in some respects it is just the opposite. The *user* must *give up* the most profitable alternative return on funds if he decides to prepay future costs of operation via ownership or prepaid leases. By contrast, an *owner-lessor* will *acquire* the most profitable alternative return on the funds derived from a sale or a prepaid lease of his properties. But the most profitable alternative rate of return is not the same for both parties. Funds of a user not invested in fixed assets are likely to be invested in financing of current operations. As we have seen, the rate of return on such an investment is apt to be very high. By contrast, funds obtained from the sale of fixed assets will probably be invested by the seller in marketable securities of a type that yields a 3 to 8 per cent annual return. Considering this alternative, rental properties are likely to be valued higher by the original owner than by prospective users.

THE PARADOX EXPLAINED

There are many organizations such as insurance companies and endowed institutions that are very happy to secure an annual return of 5 to 8 per cent on their funds. While this remains true, an entrepreneur able to earn a high return on funds devoted to current financing can scarcely afford to tie up his resources in fixed assets. In other words, it is not profitable to *prepay* future costs of operation and forego a high return on an equivalent amount of working capital.

Chapter V

THE TAX ANGLE

It is frequently said that income tax considerations make it more profitable to lease equipment than to buy it outright. Two arguments favor this point of view:

Argument 1. In computing taxable income the government sometimes insists that the cost of a fixed asset be written off over the period of its operating life whereas the owner would prefer to write it off during the period of its economic usefulness.

To illustrate the effect of the government's rule upon taxes, assume that the operating life of a certain machine is nine years but that considerations of efficiency are such as lead to its junking after five years. Assume further that the machine can be purchased for \$5,000 or leased for \$1,000 a year, and that income attributed to it is \$3,000 a year. Then, computations for income taxes would be:

TABLE I

	If machine is owned		If machine is leased
	As government computes it	As owner computes it	As lessee and government compute it
Income (after labor)	\$3,000.00	\$3,000.00	\$3,000.00
Deduct rent			1,000.00
Deduct depreciation 1/9	555.00		
Deduct depreciation 1/5		1,000.00	
Taxable income	\$2,445.00	\$2,000.00	\$2,000.00
Taxes	1,149.15	1,149.15	940.00
Net to stockholder	\$1,295.85	\$ 850.85	\$1,060.00

As will be noted, the figures in this table definitely favor leasing over buying, since taxable income is lower and net to the user is higher when the property is leased.

The computations of the above table are correct for the first four years. The error involved arises from a tacit

assumption that the figures are also applicable to the *fifth* year. If, as a matter of fact, the machine proves to be economically useless at the end of the fifth year, income tax rules allow an adjustment in the rate of depreciation applicable to this fifth year. The nature of this adjustment depends upon what course of action is to be taken by the owner of the machine. He may decide to trade it in on a new machine, in which case the undepreciated portion of the old machine must be added to the cost of the new machine to be written off over the life of the new machine. He may decide to sell the old machine, in which case he may deduct his loss as a capital loss incurred in the fifth year. Lastly, he may simply junk the machine, in which case his depreciation for the fifth year may include the entire undepreciated book value of the machine. If the owner sells or junks the machine, his income tax for the fifth year is computed as follows:

TABLE II

Income (after labor)	\$3,000.00
Deduct depreciation (a capital loss)	2,780.00
Taxable Income	\$ 220.00
Income tax (47 per cent)	103.40
Net to stockholder	\$ 116.60

In Table III below, the tax situation is summarized. (1) as the government figures it, (2) as the owner would like to figure it if he were free to do as he wishes, and (3) as it is figured when the machine is leased.

TABLE III
INCOME TAXES PAID

Year	Machine Owned		Machine Leased
	As per government	Owner's choice	
1st	\$1,149.15	\$ 940.00	\$ 940.00
2nd	1,149.15	940.00	940.00
3rd	1,149.15	940.00	940.00
4th	1,149.15	940.00	940.00
5th	103.40	940.00	940.00
Total	\$4,700.00	\$4,700.00	\$4,700.00

It will be noted that though the owner's choice of tax computations coincides with the lease method, the total amount of taxes paid in the long run is no greater whether the machine is owned or is leased.

We are forced to conclude, therefore, that there is no tax advantage *per se* in the lease arrangement. This conclusion assumes, of course, that there is no change in tax rates. If such a change in rates occurs in an upward direction, the advantage lies with owning; if tax rates are revised downward the lessee gains more than the owner. This result stems from the fact that the government rules tend toward under-depreciation in the early years.

In all of the above computations it was assumed that the machine became unuseable at the end of the fifth year. Hence five rentals were compared with the cost of owning for five years—from the tax angle only. The tax angle is different if a machine turns out to have the operating life insisted upon by the Treasury. In this event the computations of the government in Table I above are correct and should be duplicated for later years. The situation which results when a machine has an eight-year life is summarized below.

TABLE IV
TAX ADVANTAGE IF LIFE OF MACHINE IS EXTENDED

Net to stockholders if machine is owned, i.e., $9 \times \$1,295.85$	\$11,662.65
Net to stockholders if machine is leased, i.e., $9 \times \$1,060.00$	9,540.00
Advantage of ownership	<u>\$ 2,122.65</u>

The reader is cautioned against over-generalizations. Our discussion has not proved that there is no profit advantage in leasing: it has only proved that *there is no tax advantage in the lease arrangement*. As has been shown, the advantage of the lease arrangements lies principally in the way it frees dollars, otherwise invested in ownership of fixed assets, for *more profitable* uses.

Argument 2. The tax angle of leasing has been presented as follows: Suppose ABC Manufacturing Company needs a new lathe that can be purchased for \$10,000, or rented for five years for a total of \$10,900. The machine is assumed to have a useful life of five years and a salvage value of \$2,000. As will be seen, this computation avoids the error of the earlier one; it admits that the government allows actual depreciation to be deducted.

TABLE V

	Costs if ABC Buys Lathe	Costs if ABC Leases Lathe
Rent paid in five years		\$10,900
Depreciation in five years	\$8,000	
Insurance for five years	180	(included in lease)
Total tax deductible expense	\$8,180	\$10,900
If these expenses had not been incurred, profits would have been higher but taxes would have taken 47 per cent—hence cost to user is only 53 per cent above expense	\$4,335	\$ 5,777
Interest charges on money invested (at 5 per cent on average investment)	1,800	
Total true cost	\$6,135	\$ 5,777

The figures of the above table are not hypothetical. They resemble those contained in an article found in *Business Week*.¹ The sub-heading of the article, printed in heavy *sans-serif* type, states: "Tax angle makes it cheaper for some companies to lease equipment for five years than to buy it outright." Yet the figures of the table prove the very opposite. They show clearly that the cost of operating an owned machine is \$4,335, as compared to a cost of \$5,777 to operate the leased machine. The advantage of the leasing arrangement suggested by the table lies in the \$1,800 interest charge and not at all in the tax angle as suggested by the heading.

¹ "Machine Tools For Rent", *Business Week*, October 28, 1950, p. 92.

Even then the computations of the table are not correct. If the company borrowed the funds to buy the machine, interest charges of \$1,800 would have been deductible for income taxes and added only \$954 to the cost of owning (53 per cent of \$1,800). This would have made \$5,289 the cost of owning. On the other hand, if leasing the machinery had actually released funds that could have been invested so as to bring the company \$1,800 of interest income, then 47 per cent of this income would have been surrendered to the government in income taxes and only \$954 of the interest earned would have remained. Thus, even under these conditions the company, by owning rather than leasing, has foregone only \$954 of interest instead of \$1,800.

What the table really proves is that there is no tax advantage in leasing and no other advantage either if the best alternative use of the funds freed by leasing is only 7 per cent (when the tax rate is 47 per cent).²

Argument 3. The third argument, mistakenly used to show a tax advantage in leasing, is based upon the fact that the trend of price is upward. As a result, depreciation permitted for tax purposes is inadequate to permit a write-off equal to replacement costs. Leasing is said to have a tax advantage because the full amount of the rental is deductible—an advantage which is supposed to have an increasing importance as replacement costs go still higher and tax rates are raised.

It is true that under leasing, the annual rental is fully deductible as an expense, and it is evident that deprecia-

² The interest at 7 per cent would have been \$2,520 of which the government would have paid \$1,185 through a tax reduction. The real cost to the machine owner therefore would have been \$1,335. The cost of owning would therefore have been \$5,670 as compared with a \$5,777 cost under leasing. Hence, to show an advantage to leasing in this example the most profitable alternative rate of return used in the interest computation must be in excess of 7 per cent.

tion based upon original cost does not permit a total deduction equal to replacement costs. But this does not add up to a tax advantage under leasing. The following assumptions are made in order to illustrate the fallacy of this argument.

(1) A particular installation costs \$10,000 but replacement costs will rise 20 per cent during the life of this equipment. Annual income attributed to the machine, after deducting all costs except depreciation, is \$2,000.

(2) The equipment has an expected life of ten years after which time it has no value whatsoever.

(3) The corporation tax rate is 47 per cent of reported earnings after depreciation.

(4) The lessor includes in the annual rental an allowance for depreciation which will equal replacement cost, i.e., 120 per cent of original cost.

(5) The rental also includes allowances for costs of servicing and maintaining the equipment, interest, insurance, and so on; but the only part of the annual rental dealt with here is that part which is equivalent to depreciation based upon replacement costs.

Assumptions 4 and 5 are artificial, but they bring out the basic point that, under leasing, a rental including depreciation on replacement costs is deductible for tax purposes, whereas an owner deducts depreciation on original cost only. The question is: Does a tax advantage accrue to the user, under leasing, in that his profits are computed after a deduction of a charge which more truly states his equipment costs than is possible under outright ownership?

It may appear that an advantage exists because the owner-user deducts \$1,000 depreciation (1/10th purchase price), whereas the lessee-user deducts the entire rental which includes depreciation at the rate of 120 per cent of original costs. Under these assumptions income tax would be computed as shown in Table VI.

Retained income is higher under ownership, but if the owner maintains his equipment he must anticipate a 20

per cent increase in replacement costs, i.e., \$200 per year. This \$200 is not deductible for taxes but must be earmarked out of the \$530 retained income, leaving a disposable earning of \$330. In other words it would ap-

TABLE VI

	Owner	Lessee
Income (after costs)	\$2,000	\$2,000
Depreciation	1,000	1,200
Taxable Income	1,000	800
Taxes at 47 per cent	470	376
Retained Income	\$ 530	\$ 424

pear that, if capacity is to be maintained, the owner realizes only \$330 of disposable income, whereas the lessee realizes \$424. The lessee pays \$376 in taxes whereas the owner pays \$470 in taxes, and in this sense there is a tax advantage. The fallacy of this is clearly seen when total depreciation and tax outlays are considered. The lessee pays out \$1,200 in the rental and \$376 in taxes, a total of \$1,576. The owner pays out \$470 in taxes and recognizes a \$1,000 depletion in the value of his equipment for a total of \$1,470. At the end of ten years the owner will have recovered his \$10,000 investment in the machine plus \$5,300 in earnings after taxes. By contrast the lessee will have \$4,240 in earnings after taxes. At this point neither has a machine, but the former owner has \$5,300 of disposable funds whereas the lessee has only \$4,240 of disposable funds. This proves only that during a period of rising price levels it is profitable to own regardless of the tax angle.

Chapter VI

LEASING FROM THE LESSOR'S POINT OF VIEW

When a building or a machine is rented rather than purchased, the lessee obtains its use via an investment of funds equivalent in amount to the rent for a single period. To the extent that the lessee escapes the risks and financial burdens of ownership, the lessor must assume them. It would appear, therefore, that the lease arrangement merely shifts the disadvantages of owning from the lessee to the lessor. Consequently, a manufacturer who changes from a policy of selling to a policy of leasing his products, is likely to find his financial needs exceeding his ability to borrow. His situation arises from two facts. First, the amount of a lessor's funds tied up in machines under lease tends to increase so rapidly that it soon exceeds the total investment of the lessor in other assets. Second, bankers, unacquainted with the long-run effects of leasing, are inclined to view the lessor's need for credit accommodation as excessive when judged by conventional standards.

FINANCING REQUIREMENTS OF LESSORS

The effects of leasing upon the lessor's financial needs can best be made clear by a hypothetical illustration. Assume, therefore, that the company, whose initial balance sheet is displayed below, produces ten machines a month at a delivered and installed cost of \$37,000. The machines are sold for \$50,000 on terms of \$23,500 down and the balance in eleven monthly payments of \$2,500.

Balance Sheet of Hypothetical Manufacturing Company

Working Capital \$	400,000	Capital Stock & Equity	\$1,200,000
Fixed Assets	1,000,000	Trade Accts. Payable	200,000
	<u>\$1,400,000</u>		<u>\$1,400,000</u>

If we assume that the working capital shown on the balance sheet is needed to finance production, then the firm's receivables and its borrowings (other than trade payables) throughout the first year would vary as follows:

	<i>Receivables</i>	<i>Borrowings</i>
1st month	\$ 0	\$ 0
2nd month	265,000	135,000
3rd month	505,000	245,000
4th month	770,000	335,000
5th month	910,000	395,000
6th month	1,075,000	430,000
7th month	1,215,000	440,000
8th month	1,330,000	425,000
9th month	1,471,000	385,000
10th month	1,885,000	320,000
11th month	1,935,000	230,000
12th month	1,950,000	115,000
13th month	1,940,000	0

It will be noted that in the absence of dividends, the profits of the first year will eliminate all need for bank financing after the thirteenth month.

Let us now compare this situation with that which will exist if the firm should lease each of its machines for a monthly rental of \$1,000. Under such circumstances it will recover its costs in thirty-seven months and will receive the equivalent of the sales price (\$50,000) in four years and two months. If we assume an average life of five years for the leased machines, the firm will continue to earn \$1,000 per machine per month for ten additional months.

Cash expenditures the first month will be \$360,000; cash income will be nil. The ten machines produced the first month would provide \$10,000 of rental income dur-

ing the second month, but cash expenditures in the second month will be \$360,000. In each succeeding month cash inflow will increase by \$10,000, (ten more machines in operation), while cash expenditures will remain at \$360,000. The relationships suggested can best be displayed in a diagram.

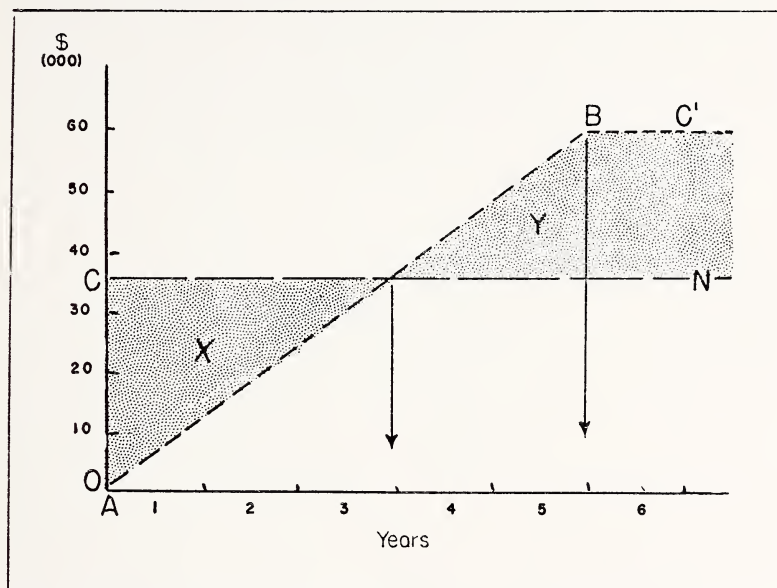


FIGURE 2

Chart of in-flows and out-flows of cash for a manufacturer operating at a constant scale and leasing output on a five-year contract.

On this diagram the line ABC' represents expected cash inflow: nothing the first month, the rent from ten machines the second; from twenty the third month, and so on until the sixtieth month, after which, with an assumption of a five-year life, the new machines produced each month will be needed to replace old ones being retired. Monthly expenditures throughout the period will remain constant at \$360,000 and are shown on the

chart by the line CN. Even though the first month's expenditures exceed receipts by \$360,000, no borrowed funds will be needed until the second month, since the firm's initial working capital was assumed to be sufficient to finance operations (\$360,000 for financing and \$40,000 for a minimum cash balance). The shaded area, "x," represents the excess of cash-out over cash-in. Similarly, the shaded area "y" represents the excess of cash-in over cash-out. Line AB crosses line CN during the thirty-sixth month which thus becomes the point at which the process is self-financing.

The two curves shown in Figure 3 compare the cash

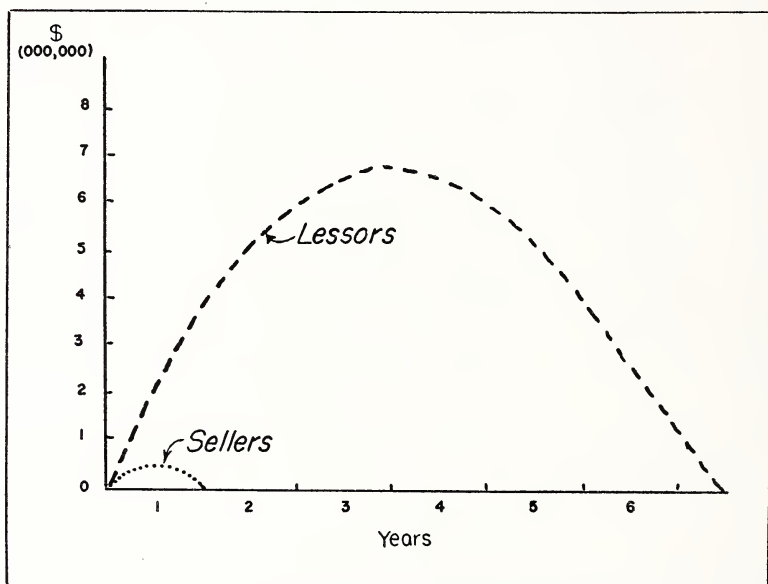


FIGURE 3
Relative Capital Needs of Manufacturers Who Sell and of Those Who
Lease Their Products

requirements of selling (on the terms described) with those of leasing (on the terms assumed). In both cases it was assumed that the manufacturer did not expand his

scale of operations. It will be noted that the lease arrangement requires more funds for a longer period of time, but that loans secured by the leases are self-liquidating and that the need of outside financing is temporary.

The reader may question the use of hypothetical examples as being unreal. This unrealism is admitted. The object of the examples is to clarify certain basic principles that apply to financing leasing, and to compare the capital needs of that method of operation with those of selling procedures. *The unrealism of the examples is common to both procedures.* Hence, the conclusions of the comparison remain valid.

EFFECT OF DECLINE IN BUSINESS ACTIVITY

The previous discussion compared the capital needs of a company selling its product with those of a company which leases its product. The conclusion was that the latter requires considerably *more funds for a longer period of time than the former.* Naturally, this fact will cause bankers to hesitate to finance companies that lease rather than sell their products. This hesitancy might be lessened somewhat if it could be shown that the income of lessors is more stable than that of outright sellers when the product is a machine used to produce consumer goods.

To illustrate, assume again a company manufacturing ten machines a month at a cash outlay cost of \$360,000, of which \$120,000 is fixed and \$240,000 is variable. Assume further that at the end of the second year the demand for the *product of the machines* declines 10 per cent. Such a decline could mean a 100 per cent decline in the demand for *new machines* since those who use the machines will have no need for new machinery.

A manufacturer who has operated for two years will have 240 of his machines in use. If these machines are leased he will have a monthly income of \$240,000 even

though he ceases manufacturing operations altogether. By contrast, the manufacturer who sold his 240 machines will find himself with no income in the third year, but his \$120,000 of fixed expenses will continue. His cash inflow will continue for eleven months as he collects outstanding accounts receivable.

SUMMARY OF EFFECTS

It will be noted that during the "getting-under-way" period the net cash inflow of the seller is greater than that of the lessor. However, the effect of a cessation of manufacturing operations is to convert the net inflow of the seller into a net cash deficit, whereas the effect of a cessation of manufacturing operations on a lessor is to convert a negative cash inflow into a net cash inflow. That is to say, a business depression of small proportions (10 per cent decline in the example) will improve the debt paying ability of lessors by decreasing their outflows without affecting their inflows. If a seller-manufacturer curtails operations similarly, he decreases his ability to pay debts.

The situation developed above is easily explained. The manufacturer who leases, capitalizes his manufacturing expenses and then writes them off over the life of the leased machines. As pointed out earlier, he has an enormous investment in machines under lease which he will recover over a period of five years. Even if the production of new machines stops completely, these recoveries of old expenditures continue. From the profit and loss point of view, the receipts of each period are treated partially as recovery of costs and partially as profit. By contrast, a manufacturer who sells his output must write off all operating costs during the period in which the sale occurs. The situation depicted in Table I would be even more favorable to a lessor if we could assume that the depression did not strike until after three years of operations. This fact is brought out in Table II.

TABLE I

	PROFIT AND LOSS BASIS				CASH BASIS (Net)	
	Seller		Lessor		Seller	Lessor
	Income	Expense	Income	Expense ¹		
First year	\$6,000,000	\$4,320,000	\$ 660,000	\$ 396,000	+\$ 150,000	-\$3,410,000
Second year	6,000,000	4,320,000	2,100,000	1,260,000	+1,800,000	-2,340,000
Third year	0	1,440,000	2,100,000	2,700,000	+ 210,000	+1,440,000
Fourth year	0	1,440,000	2,100,000	2,700,000	- 120,000	+1,440,000
Fifth year	0	1,440,000	2,100,000	2,700,000	- 120,000	+1,440,000

¹ Cost of manufacturing is capitalized in case of leasing, and only depreciation on leased machines would appear as cost. In the years of no production, fixed expenses of the plant have been added to the depreciation of leased machines.

TABLE II

	PROFIT AND LOSS BASIS				CASH BASIS (Net)	
	Seller		Lessor		Seller	Lessor
	Income	Expense	Income	Expense		
First year	\$6,000,000	\$4,320,000	\$ 660,000	\$ 396,000	\$ 150,000	-\$3,410,000
Second year	6,000,000	4,320,000	2,100,000	1,260,000	1,800,000	-2,340,000
Third year	6,000,000	4,320,000	3,540,000	2,124,000	1,800,000	- 900,000
Fourth year	0	1,440,000	3,540,000	3,564,000	210,000	+2,880,000
Fifth year	0	1,440,000	3,540,000	3,564,000	-120,000	+2,880,000
Sixth year	0	1,440,000	3,540,000	3,564,000	-120,000	+2,880,000

SUMMARY OF FINDINGS

1. Manufacturers who lease rather than sell will find it necessary to have available capital resources far in excess of those needed by manufacturers who have the same output but sell on terms that require purchasers to pay in twelve to eighteen months.

2. Manufacturers who lease will find their net earning situation much more stable than will those who sell their product.

3. Manufacturers who lease will find their cash position during a depression to be much better than that of those who sell.

Chapter VII
THE THEORY REITERATED
AND MODIFIED

The discussion of the previous chapters has suggested that the most profitable use of funds is their use as working capital. Therefore, it was concluded that a manager should consider carefully before diverting funds from this "most profitable" use to prepaying expenses of future operations, i.e., acquiring ownership of fixed assets, unless such prepayments result in a reduction in the amounts involved sufficient to compensate the firm for foregoing the alternative rate of profit.

FIRST OBJECTION

Two objections to this theory may be advanced. The first is that the theory does not apply when funds to purchase fixed assets are borrowed at reasonable rates of interest. This objection is not valid. The object of the management of an enterprise is to maximize earnings. To do so funds, regardless of their source, should be devoted to the most profitable uses possible.

To emphasize the point, assume that funds used for working capital purposes net a firm 18 per cent per annum, and that funds used to prepay future costs of operations (purchase of fixed assets) will cause those costs to be 10 per cent less. Suppose \$100,000 of funds can be advanced by owners of the enterprise and still another \$100,000 is available by borrowing at 6 per cent. Obviously, earnings to the enterprise and its owners are maximized if all the funds available are used as working capital. What we are in effect saying is that the cost of acquiring funds in no way affects the application of our

principle that *every dollar* available should be put to the most profitable possible use.

SECOND OBJECTION

It may be argued that the principle, as stated, *assumes* that an indefinite quantity of funds can be put to working capital uses. In other words, the principle suggests that because the firm's present working capital is earning 18 per cent, more funds put to the same use would earn a similar rate.

Obviously, the theory needs qualification, and this appears to be the place to make that qualification. Additional funds devoted to working capital uses may well result in a lower percentage return than funds already so used. If so, then a sensible policy would be to continue using funds for working capital purposes until the return on the last funds applied is lower than the discount earned from prepaying future costs of operation.

To illustrate the application of this rule, assume that \$100,000 employed as working capital would result in earnings of \$18,000 (18 per cent), that a second \$100,000, so employed, would earn \$12,000 (12 per cent), that a third \$100,000 would net \$6,000 (6 per cent), and that a fourth \$100,000 would earn only \$2,000 (2 per cent). Assume further that \$100,000 invested in fixed assets will reduce future costs of operations by 10 per cent per year and that funds can be invested in securities to earn 4 per cent. If we arrange these possibilities in the order of their descending earning rate, the following array results:

Order	(Use of \$100,000)	Rate (%)
1	Working capital	18
2	Working capital	12
3	Purchase of fixed assets	10
4	Working capital	6
5	Investments	4
6	Working capital	2

If borrowed funds cost 5 per cent, obviously only the first four uses are profitable. And it is evident that funds should not be used to purchase fixed assets until after \$200,000 is employed as working capital. There can be no question but that the third \$100,000 of funds should be invested in fixed assets rather than used as additional working capital.

CONCLUSION

The thesis of the earlier chapters was not that working capital is more profitable *per se* than ownership of fixed assets; rather the conclusion, as now set forth, is that one should consider the profitableness of working capital uses before deciding to own fixed assets, provided, of course, that it is possible to secure the *use* of fixed assets without owning them.

Chapter VIII

THE BUYER'S DILEMMA

As has been pointed out, the decision as to whether one should lease or own is a managerial problem and should not be made until careful consideration has been given to the effect upon profits of alternative courses of action. If the revenue picture remains unaffected, the problem reduces itself to ascertaining comparative costs. Users of machinery will find few situations that offer them the option of buying or leasing. If the choice is one of buying from one manufacturer or leasing from another, a cost comparison is most difficult because the products of competing manufacturers are seldom homogeneous.

However, the difficulty of comparing costs remains even when an option to purchase or to lease identical machinery is offered. For example, Remington Rand, Inc. will sell or lease certain of its products. Data obtained from this company's sales literature suggest that their purchase price tends to approximate five years machine rental. At the time of writing, the policy of the company appears to be one of emphasizing the advantages of ownership. A comparison of sales prices and rental charges of this company for certain of its products is as follows:

<i>Item</i>	<i>Catalog Number</i>	<i>Purchase Price</i>	<i>One Year's Rental</i>
2 Punches	— 306-2	\$ 4,410.00	\$ 840.00
1 Sorter	— 220	2,520.00	480.00
1 Interfiling Repro- ducing Punch	— 310-1	8,505.00	1,620.00
1 Interpreter	— 312-1	6,300.00	1,200.00
1 Summary Card Punch	— 311	5,040.00	960.00
1 Tabulator	Type 3080	23,295.00	4,680.00
		<hr/> \$50,070.00	<hr/> \$9,780.00

It will be noted that the purchase price for the total installation is 5.1 times as large as one year's rental, and that the purchase price of individual items in the installation range from 4.97 to 5.25 times a single year's rental.

The immediate reaction of the prospective buyer to the data presented is liable to be a conclusion that the cost of leasing is very high if during a five year period he will pay in rentals a sum equivalent to the purchase price. If he suspects that the equipment will be useable for a period longer than five years he will be inclined to conclude that leasing is too costly. It may be difficult for him to visualize any advantage from leasing sufficient to justify the additional outlay required under the lease.

But the amount by which lease costs exceed ownership costs cannot be computed merely by adding the rental payments for the expected life of the equipment and subtracting the purchase price, for such a procedure overstates the cost of leasing. A series of adjustments must be made before a fair comparison results. These adjustments are necessary, first, because the annual rental includes charges other than the recovery of the cost of the equipment and, second, because the purchase price does not include *all* the costs of ownership.

For purposes of illustration, assume that a prospective user of the above installation has determined to install the equipment but is undecided as to whether to lease it or to buy it outright. In round numbers, he is trying to decide whether to make a \$50,000 outlay and own the equipment, or to enter into a lease agreement to pay a \$9,800 annual rental for the use of the same equipment. His concern is simply to find out how much it actually costs to lease.

SERVICE AND MAINTENANCE

The first adjustment necessary has to do with service and maintenance. A lease payment ordinarily includes an

allowance for servicing and maintaining the equipment for the user. In this instance it happens that the company offers a mechanical service contract to outright purchasers at 4 per cent of the purchase price. Since the annual rental contract includes this service, to obtain a true cost comparison \$2,000 must be added to the cost of ownership or deducted from the cost of leasing. (See item b in Table I)

INSURANCE

The cost of insurance, included in the lease, would have to be borne by the user if the equipment were purchased. Assuming a rate of 1 per cent of the purchase price, this item would necessitate an addition of \$500 to the cost of ownership. (See item c in Table I)

INTEREST

A third adjustment must be made to recognize the interest cost on the capital tied up in the equipment if it is owned, or in prepaid rentals if the lease calls for a payment at the beginning of each year. The theory behind this adjustment has been covered in earlier chapters. The object here is merely to explain the theory by application to a practical situation.

In the Remington Rand situation mentioned, the user has a choice of advancing \$9,780.00 as a prepayment of the first year's rent, or of paying out \$50,070.00 to purchase the equipment, plus a \$2,002.80 annual service charge. In either case the user will be deprived of the most profitable alternative use of the funds. In the latter case he will be deprived of \$42,292 more funds than in the former. Therefore, it would be possible to compute the interest only on this sum. It is apparent, however, that the firm does not give up the use of this \$40,290 for the entire period of the equipment's useful life. The *average* capital investment may well be assumed to be half the sum plus one year's service charge, i.e. \$22,151.

Earlier discussion has made it clear that the price paid for capital does not measure the cost of its use. Regardless of whether capital is obtained by borrowing at 8 per cent, 5 per cent, or 2 per cent, if it could be put to work to earn 9 per cent, a firm loses 9 per cent by using it to prepay future machine costs. Earlier discussions made it clear also that the average rate of return on the firm's present working capital may not represent the rate that would be earned on *additional* working capital. To compare the cost of leasing with the cost of owning it is necessary to determine the most profitable alternative *marginal* rate of return; i.e., the rate that would probably be earned on additional capital.

If we assume this rate to be 5 per cent, then an interest cost of \$1,107.55 (5 per cent of \$22,151) must be added to the cost of owning. It should be pointed out that this is not the interest cost of owning the machinery the first year. The interest cost of owning the first year is actually \$2,022.50. The average cost is lower than this because the last year's interest cost is less than the average.

DEPRECIATION AND OBSOLESCENCE

Even a reasonably correct estimation of the depreciation and obsolescence charges, which are presumably included in the annual rental charge, is difficult if not actually impossible to make. For equipment, certainly, it is necessary to estimate the service life and to recognize an annual cost of ownership which permits the amortization of the cost over its economic life. This limited service life is a function of many factors and conditions, most of which are difficult to estimate. The equipment is subject to wear and tear from actual operations, extraordinary damage due to improper handling or servicing, and a certain deterioration which occurs with the lapse of time. These so-called physical or internal causes of depreciation are perhaps more easily estimated than the

functional or external causes which generally are covered by the term obsolescence.

In a narrow sense, obsolescence refers to the decrease in equipment value resulting from the advent of new inventions and technical developments, but broadly the term refers to the loss of value occasioned by the entire range of changes in product, processes, demand, and general business conditions. In any event, it is apparent that depreciation and obsolescence charges reflect one of the most important costs of ownership, and it seems equally apparent that the annual rental charge must include an allowance for the lessor's assumption of these costs.

The buyer of equipment will readily recognize that different types of equipment should be expected to have varying periods of economic usefulness, and furthermore, individual items in the same basic class of equipment will have different spans of usefulness. In the business machine installation, the punchers and sorters might have an expected economic life of fifteen years, whereas the tabulator may have an expected eight year life.

Actually, of course, an attempt to estimate the allowances that should be made for obsolescence requires one to estimate, first, the rapidity with which product improvements will reach the market, and second, the increased value in use which the improved equipment will have over the old equipment. The suggested life expectations published by the Bureau of Internal Revenue are, at best, reasonably close approximations of the replacement decisions made by owners of equipment in the past. The danger of projecting a past rate of equipment replacement into the future is self-evident, and yet it is necessary to make some estimation of obsolescence charges if the cost of leasing as against owning is to be established. In the case of the business machine installation, the buyer would have to decide what part of the

annual rental should be viewed as a charge for the lessor's assumption of the depreciation and normal obsolescence.

For purposes of illustration, ten years may be assumed as the expected economic life of the equipment. Using a simple straight line method of spreading the allowance for depreciation and obsolescence, the adjustment requires recognition of depreciation of \$5,000 annually as a cost of ownership. It must be emphasized, however, that such an estimate is very likely to be extremely arbitrary and, at best, includes an allowance for obsolescence based upon past replacement patterns. Unfortunately, there is little opportunity for precise calculations in attempting to estimate the rate of technological advance. The \$5,000 allowance used here might be described as an amount providing for normal obsolescence.

RESIDUAL RENTAL PAYMENT

After making the adjustments suggested above, (see Table I), a buyer will find that the annual rental exceeds

TABLE I
COMPARISON OF THE ANNUAL COSTS OF OWNERSHIP WITH
THE ANNUAL RENTAL—BUSINESS MACHINES ILLUSTRATION

<i>Item</i>		
a	Annual Rental	\$9,800.00
Costs of Ownership		
b	Service and Maintenance Costs at 4 per cent of purchase price (cost)	\$2,002.80
c	Insurance at 1 per cent of purchase cost	500.70
d	Taxes at 1 per cent of average book value of the equipment	250.35
e	Interest on capital at 5 per cent of the average differential investment in equipment as compared to the lease	1,107.55
f	Normal Depreciation Allowance—based on ten year life expectance	5,007.00
Total cost of owning (on an annual basis)		8,858.40
Residual Rental payment which under ownership would serve to offset the danger of abnormal depreciation, etc.		\$ 941.60

the annual cost of ownership by about \$941.60. Due to the guessing involved in some of the estimations, this amount might well be viewed as an offset to the possibility of abnormal depreciation occurring during the next ten year period.

CONCLUSION

The object of this chapter is not to prove that owning is cheaper than leasing (as suggested by our illustration), or that the opposite is true. The object is *to illustrate the type* of cost comparison that should be made.

Chapter IX

"NON-COST" CONSIDERATIONS AND THE OBSOLESCENCE FACTOR

In the previous chapter a formula was given for comparing costs of owning with costs of leasing when both alternatives are available for specific assets. Some of the difficulties of making such a cost comparison were mentioned. For the most part, the difficulties existed because of uncertainties as to what rate of interest to use or as to what life to ascribe to the equipment. However, if assumptions were made, the problem was soluble. But, in addition to such cost considerations, it is necessary for a prospective purchaser to consider other intangible factors, those which cannot be reduced to either a plus or minus dollar sum.

A LEASE PERMITS GREATER FLEXIBILITY IN USE

It must be obvious that a user has greater flexibility when he uses equipment that is leased. The purchaser of a machine is married to its use for a certain period of time. Uncertainties inherent in the individual firm or caused by competitive conditions may well cause management to hesitate to purchase when the price of a machine involves a heavy capital commitment. The lease avoids such long run commitments: it is like free-love—the union can be dissolved at any time when engineering factors warrant a change.

There may well be doubt as to the wisdom of expanding capacity, arising from uncertainty as to future business conditions. A user may fear that technological processes will change—changing his need for certain

types of equipment. Such uncertainties might cause the user to hesitate to complete a purchase, but the lease arrangement encourages him to obtain needed equipment in spite of such uncertainties. If technological changes in products or processes occur, users may terminate their leases. In many instances, the rental payment is based upon the amount of use made of the equipment; this modifies the risk which accompanies fluctuations in business conditions.

A LEASE ENCOURAGES TRIAL OF NEW DEVELOPMENTS

The lease also gives a user greater flexibility in acquiring new and improved machinery. While the investment required under outright purchase may well cause a firm to hesitate to install an innovation that has not been completely tested in use, the lease permits a trial use of the equipment without the assumption of the risks that go with ownership. If a new machine turns out to be unsatisfactory, the user can terminate his lease and return to the use of proven equipment. In short, an important advantage to users who lease is that they will have greater flexibility in experimenting with new equipment, because the lease permits the trial of new equipment without the risk of losing the full purchase price.

FLEXIBILITY AIDS INDUSTRIAL PROGRESS

It is evident that the greater flexibility in use, characteristic of the lease arrangement, permits an individual user to minimize the costs of idle and unused capacity. In addition, the lease makes expensive equipment available to users who would find the heavy capital outlay required for outright purchase beyond their financial resources. The lease, on these two counts, helps to improve the efficiency of the economy.

But of even greater significance is the part played by

the lease in speeding up the pace of innovations and improvements. There is little need to demonstrate the importance of advances in technology to an ever-increasing standard of living, but the part played by leasing is sometimes overlooked. Attention has already been given to the fact that the lease encourages users to give new developments a trial. Technological progress is not simply a matter of the flow of new and improved consumer goods. If new machines and productive methods are not rapidly accepted by the market, economic progress will be slowed. Because it helps overcome the financial barrier of the large capital commitment, leasing tends to speed the rate at which new developments may actually be adopted by industry.

However, leasing also plays another part in speeding the rate of technological advances. Under leasing, the relationship of the user to the lessor is close. As a result, the problems and equipment needs of the user are more clearly and readily understood by the lessor's research and engineering staff. Product improvements directed to these specific needs are encouraged. The user's plant offers a readily available trial installation, and the services of his engineers will prove valuable to the machinery manufacturer in developing improvements. And finally, production and maintenance data on leased machines facilitates the planning of improvements. In short, the lease facilitates technological progress, first, by encouraging the actual development of the improvement itself, and second, by speeding up industrial acceptance or use of the improvement.

A LEASE, SHIFTS RISKS

Now it is evident that the risk of technological innovations, of changes in business conditions, or of failure of a new product to perform up to expectations, does not

evaporate merely as a result of a policy of leasing. All that a lease accomplishes is to transfer these risks of ownership from a user to a lessor. This shift of risks from user to lessor does not mean that the user also escapes their costs. The mere fact that the user does not invest capital in ownership does not preclude the possibility that he may pay in rentals an amount well in excess of the purchase price of the leased asset. Although the risks of obsolescence and change are carried by the lessor, the lessee pays him in the form of higher rentals for the assumption of the risks involved.

On this count leasing is somewhat akin to insurance; the risks inherent in ownership are shared by all the lessees, each of whom pays a certain and known cost (included in the annual rental), thereby avoiding the assumption of the uncertain costs associated with outright ownership. Leasing differs from insurance in that the total or aggregate loss expected from the obsolescence factor is not known, as it is in the case of fire or physical destruction. However, if machines of diverse uses are included in the group, then the loss from obsolescence *for the group* is more nearly ascertainable than the obsolescence *for any one machine* in the group. Under this assumption leasing more closely approximates the principle of insurance. To illustrate, consider a group of ten highly specialized machines that have one particular use in industry. Assume that the ten machines are so specialized that they have no residual value other than scrap if they become obsolete for their present use. Under such circumstances the risk of obsolescence for any one machine would appear to be the same as the risk of obsolescence for the group, since an innovation would affect all alike. However, if the group consisted of ten identical machines being put to ten different industrial uses, the nature of the risk is changed radically. Under

these circumstances a technological change affecting a specific use can be expected, but it is improbable that such an innovation will render the equipment obsolete for all ten industrial uses. In such a case, it is obvious that the rate of obsolescence is more certain for the *group* than it is for any individual installation.

Leasing then is a method of pooling and sharing the risk of ownership; the advantage to the user is not that he escapes the cost of obsolescence but that he substitutes a known rental fee for an uncertain and perhaps costly obsolescence loss.

LEASES REDUCE AGGREGATE RISK

The discussion in the above paragraphs emphasized the lease as a method of shifting the risks of ownership from a lessee to a lessor. It was assumed that such a shift did not reduce the aggregate amount of risk involved. Thus the cost of such risks, when shifted to the lessor, was merely spread over all the leases and included in the annual rentals. The only advantage to the user was the substitution of a small certain annual cost for a possible large obsolescence loss.

However, it is quite possible that the use of a lease *may actually reduce* the aggregate obsolescence cost. Obviously, a reduction in the cost of the obsolescence is possible only if the risk can be *more efficiently assumed* by the lessor than by the user. In order to demonstrate such a possibility, it is necessary to examine briefly the nature of equipment obsolescence. Many times it is assumed that when new equipment of superior performance is introduced, old equipment becomes obsolete and valueless except as possible scrap. Such a view of obsolescence is quite common. According to it, the invention of a new and better machine means a sudden and complete destruction of the value of the old. The view is not

unrealistic when applied to highly specialized equipment that has one, and only one, specific use. However, most equipment is not of this nature. The typical machine has a multiplicity of industrial uses. Under such circumstances the effect of technological advances is to render the old equipment uneconomic *for a particular use*. As soon as a machine loses its most profitable use, its owner merely shifts it to the next most profitable use. With such a shift the value of the equipment declines but need not decline to scrap value. The value now will be set by the most profitable remaining use.

For purposes of illustration, let us assume (1) that a particular type of equipment has ten recognized uses in industry; (2) that the most important is use by an industry which can realize \$10,000 per year from the employment of this equipment; (3) that the other nine possible uses in the order of their importance decline in value by \$1,000 each; (4) that the market price of the equipment has been such as to limit its use to the first industry; and (5) that the scrap value of the machine is \$500.

Suppose now that a new machine is invented and that this new machine is superior to the old in its most profitable use, but that it is not adaptable to the other nine alternative uses. Those companies using the old equipment will find it desirable to replace it with the new. The market value of the old equipment will decline to the value set by its next best alternative use. Under the assumptions made, this will be its use by companies that can realize \$9,000 a year. This would be true even if the new machine could be applied both to the first and the second industrial uses but its cost in the second industrial use was prohibitive. Assumptions such as these are not entirely unrealistic.

The characteristic of obsolescence which is emphasized by this hypothetical illustration is that obsolescence is a

matter of degree. Equipment is not completely obsolete until it has no use value; that is to say, until it has only a scrap value. Technological changes, changes in business conditions, changes in demand, and other changes that lead to obsolescence, typically mean that equipment becomes obsolete for *particular uses*; not that it becomes obsolete and uneconomic for all uses. Thus, the risk and the cost of obsolescence depend upon the probabilities that equipment will become uneconomic for its present use, and hence value will be established by the next best alternative use.

An analogy of passenger automobiles has some merit. A new model car will command the full list price from certain buyers who are also users. To such persons a car is much more than merely a method of transportation. The social prestige attached to owning the latest model, the aesthetic value of the new-model lines and style, smooth performance, ease of driving, new mechanical features, and the like, all enter into the evaluation process of new car buyers. When a new model appears, an old model no longer meets all the needs of this type of car owner. The value of the old car does not decline to its scrap value however. Rather, a different group of users now establish the market value of the old car. This group is composed of persons who do not attach so high a value to "driving the latest model." Neither are they concerned at out-of-date styling. The value of a car to this group is established by its ability to render transportation with clean appearance. Such a group is satisfied with the services of three to four-year old cars, but not with services of cars five to ten years old. A cursory glance at used-car markets reveals the presence of user-buyers for ancient models also. Buyers in this group buy transportation: they will pay no premium for style or appearance. The car may be used by a farmer as a light-weight truck, or

as a second run-about for errands. Eventually, every car arrives at the dump, but not until it has passed through tier after tier of less important uses. Clearly, obsolescence does not come suddenly and does not mean the complete destruction of a car's value. Obsolescence to one group causes only a partial destruction of a car's value by removing its service potential to that group for certain uses. As the uses disappear one by one, the market value of the car declines.

There can be no questioning of the advantages to the economy of having old equipment, obsolete for particular uses, transferred to its next most important use swiftly and with a minimum of friction. If old equipment does not find its way to such alternative uses quickly, the economy wastes a part of its resources. If old equipment is scrapped rather than turned to its next most profitable employment, industry pays a needlessly high cost of obsolescence. There is, of course, inherent immobility in such transfers. Regardless of the reason for its existence, such immobility is costly. To the extent that leasing minimizes immobility by facilitating the quick transfer of partially obsolete equipment to alternative uses, it reduces the aggregate costs of obsolescence.

There are two considerations which suggest that leasing does tend to facilitate the transfer of equipment from some uses for which it has become obsolete to alternative productive uses. It was suggested previously that a lease encourages firms to give new equipment a trial because the firm does not have to make a large capital investment in the untried equipment. In the same manner, a lease facilitates the shift of used equipment to firms who, because of the machine's obsolescence for its higher use, now constitute the principal market for the machine. These firms may be reluctant to make a large capital commitment in the purchase of such a machine because

they are usually small concerns. In other instances, they may not be fully acquainted with the equipment since its use by them has just become practical as a result of the new developments at the higher level. In short, the lease serves to overcome equipment immobility by encouraging the adoption of new and improved machinery, and by facilitating the transfer of old equipment to the next best alternative use. It does this simply by removing the necessity of the new user investing large sums of his own.

When the step by step nature of obsolescence is recognized, the outright purchase of machinery is seen in its true light: namely, in an outright purchase the first owner prepays future costs of operations for the whole series of users (himself and all the others that follow him). Under the lease arrangement, each user pays cost of operations as they become current. Referring again to the automobile example, the first owner actually prepaid the use-value of the automobile for a series of subsequent owners. When he sold the car, the second purchaser reimbursed the original owner for his (the second owner's) own use and that of subsequent purchasers. Thus, each successive owner had more funds tied up in the car than was absolutely essential. The same situation occurs under outright purchase of equipment, but not when machinery is leased, since a lease does not require a prepayment of the value of the equipment to subsequent users.

There is an even more important way in which leasing results in a more flexible and economic utilization of equipment. Under ownership, the user must dispose of his old equipment by himself; that is to say, he himself must find the next most important user. Under the lease arrangement, a lessor assumes this responsibility. We have stressed the principle that the costs of obsolescence are materially affected by the ease and speed with which equipment made obsolete for one use is transferred to

the next best alternative use. The policy of leasing actually reduces the costs of obsolescence when and if the lessor possesses greater skill than the owner in disposing of the old equipment.

There are certain distinct considerations which suggest that a lessor is in a position to dispose of replaced equipment more efficiently than an owner-user. An equipment manufacturer usually has a more complete knowledge of the full range of industrial uses for a particular type of equipment than does an individual owner. His sales and service organizations are in contact with customers in the various industries using the equipment. The equipment manufacturer knows in great detail the peculiar requirements of individual concerns. In some instances one of his customers may have a use for a particular type of equipment, but the value of this use does not warrant the purchase of a machine at its full price. Such uses, in fact, constitute the market for replaced equipment. Of course, a machine's value in such uses is lower than its value in its original use: the difference measures the cost of obsolescence. If these alternative uses are not clearly known or if an owner of obsolete equipment finds it difficult to find such buyers, the price obtained for the old equipment is lower than it need be. Under such circumstances the market is imperfect only because potential sellers do not contact the highest bidders. The lessor-owner may handle disposition more effectively since he knows all the potential uses and buyers, and is in contact with each.

The lessor, being a specialist in his line, is able to assume the risk of obsolescence at lower cost than is possible for an individual owner-user. These costs are averaged and included in the annual rental charge. As a result, leasing aids industry by reducing the aggregate economic costs inherent in the ownership of fixed assets committed to certain specialized uses.

Chapter X

SOCIAL IMPLICATIONS OF LEASING

This chapter has two objectives: first, to point out general considerations concerning leasing which are important but not reducible to accurate dollar estimates, and second, to show how the lease has been and can be used contrary to the interests of users and society.

TECHNICAL ASSISTANCE

The service factor has been mentioned previously. In general, a lessee may expect service on lease equipment that would be considered "beyond the call of duty" for a manufacturer who sells his equipment outright.

The extensive service rendered by the United Shoe Machinery Corporation to the users of its machinery is widely known. Although the company sells as well as leases its products, its most important machines are leased. The company maintains a system of parts depots to facilitate repair service, and it keeps a staff of specially trained mechanics to assist those who use its machines. In addition, shoe companies obtain advice on factory layout and other administrative problems from a staff of trained management men maintained for this purpose.

To a certain extent, "extra" service is an inherent characteristic of a lease. A lessor's income from rentals is frequently tied to the level of output maintained by the user of equipment. When this is so, the lessor's service organization has a direct rather than an indirect influence upon realized revenue. Under outright sale, service on present installations is necessary for the manufacturer to obtain new sales, but the impact of service on revenue is not as direct as it is under the lease. Even when the

rental payment is not tied to output, the ease with which a lessee can cease using equipment whose performance is unsatisfactory encourages a lessor to make certain that his equipment functions properly.

Furthermore, in view of the characteristically close contact between a user's and a lessor's technical staffs, a user may expect to receive assistance from the lessor's engineering and research personnel. The simple fact that the lessor is intimately acquainted with the production problems surrounding the leased equipment makes it certain that innovations of value to lessee will be suggested by the lessor. The mutual interest of user and lessor in the continued efficient performance of the machinery suggests that a user may expect his own research activities to be supplemented with assistance from the equipment manufacturer. In summary, in many instances a lessee should consider the annual rental not simply as a price paid for the use of the equipment, but as an aggregate charge for services, personnel training, and engineering counselling and advice in solving diverse production problems.

The following excerpt from the court record of *United States vs. Hartford Empire Co. et al.* offers interesting evidence of the fact that some users recognize the value of technical assistance received from the lessor:

"... After the taking of testimony had ceased and while final briefs were being prepared, the Buck Glass Company, a licensee of Hartford and not a defendant herein, filed a motion asking that that company and twelve other companies similarly situated be permitted to intervene for the purpose of enlightening the court on the question of relief, if such question should arise.

"The court was of the opinion then that the movants desired to be heard on the value of Hartford as a servicing and research unit to the licensee, in event dissolution of Hartford was in the mind of the court. . ."¹

¹ Federal Supplement 46, *United States vs. Hartford Empire Co. et al.*, No. 4426 District Court, N.D. Ohio, W. D., Aug. 25, 1942, p. 622.

RESTRICTIONS IN USE

On the other hand, a lease may include some clauses and limitations that a user may find objectionable. The lease arrangement inevitably involves a certain amount of supervision by the lessor over the user's activities. The servicing of equipment, just cited as an advantage to a user, requires that lessees give up some of their freedom in the use of the equipment. The lessor must protect himself against abuses of his service policy, and supervision by his staff is necessary to make sure that equipment is not misused. On the other hand, users should make certain that the value of the services to be performed by a lessor is commensurate with the service charges included in the rental agreement. A lease may contain an agreement to accept, and pay for in the annual rent, service which is actually unnecessary for the particular user. This consideration assumes additional importance when it is recognized that individual users have different service needs depending upon their size, the capacity of their own service organization, and the nature of their product.

A lease may be used in many other ways to curtail the freedom of a user of equipment. A prospective lessee should determine the extent to which he is likely to be controlled as to the type of products that he can make with the equipment. The history of the glassware machinery industry affords an illustration of this type of control in its most extreme form. The basic processes in container-ware manufacture have long been owned by two companies: Owens-Illinois and Hartford Empire. The extent to which the lease may be used as an instrument of restricting freedom of use is seen from evidence presented in the T.N.E.C. hearings and in a 1945 anti-trust decision (Hartford Empire, *et al* vs. United States). Appar-

ently, machines were licensed for the manufacture of certain types of bottles with a stipulation that the user was not to shift to the production of other bottles. The following excerpts from a memorandum as to the Hartford Empire policy indicates the restrictions in use:

"(4) . . . we adopted the policy which we have followed ever since of restricting licensing. That is to say,

- (a) We licensed the machines only to selected manufacturers of the better type, refusing many licensees whom we thought would be price-cutters, and
- (b) We restricted their fields of manufacture, in each case, to certain specific articles, with the idea of preventing too much competition.
- (c) In order to retain more complete control of the situation, we retained title to the machines and simply leased them for a definite period of years, usually 8 to 10 years, with the privilege of renewal of a smaller additional term.

(5) In specifying the various fields of ware for a given licensee, we have, with few exceptions, based the classification upon the use of the article rather than shape, or other physical characteristics."²

This additional excerpt from the same memorandum suggests even further limitations on the uses of the machinery.

"(12) One particular feature requires considerable attention, namely the so-called "exclusives." In the early history of the company and in order to secure business, we granted to certain interests the exclusive right in certain of our machines for particular fields of ware. For example, we granted to four milk bottle manufacturers the exclusive right in certain of our feeders and forming machines for milk bottles. These concerns were later taken over by one concern which still holds that exclusive. We also granted exclusives on certain high qualities of glass and certain special lines of ware of the Corning Glass Works, such as bulbs, glass cooking ware, signal ware, etc.; also exclusives on lantern globes and one or two other minor lines of ware.

"We have had so much trouble with these exclusives when

² U. S. Congress, Temporary National Economic Committee, *Investigation of Concentration of Economic Power, Hearings*, Part 2, December, 1938, p. 769.

dealing with other parties that our policy is now decidedly against them."³

The lease-license system of the glassware machinery industry was restricted by anti-trust action and the Hartford Empire was ordered to sell its equipment outright to those firms who wished to purchase. The authors do not wish to imply that a user should anticipate this problem if he decides to lease. Such control systems are not inherent in leasing. The real basis of control in the glass-machinery situation was the ownership and cross-licensing of patents; the lease was used as an auxiliary to that control. Nevertheless, in the past in certain industries, the lease has been used in conjunction with monopolistic practices for purposes of limiting the free use of equipment by a lessee.

The words of the court in the Hartford Empire Case disclose the manner in which the lease may be misused:

" . . . We come now to the permanent steps to be taken. The most important question is with respect to the licensing and lease system now used by Hartford. The court believe that this is the greatest abuse. It is through the licensing and lease system that Hartford retains control over and dominates the industry. It is in this manner that Hartford maintains a system of stabilization of the industry and enforces restrictions and conditions far beyond the privileges of the patent grant. It is because of this system that it is unnecessary for Hartford, Owens, Thatcher, Ball Brothers, and others to enter actually into written agreements in restraint of trade. Every manufacturer in the industry knows what will happen if he fails to observe the practices established by these leading concerns—Hartford will repossess his machinery, if not immediately at least upon the expiration of his present lease. The court realizes that a license and lease system may be perfectly legal and just if properly used. However, in the instant case, there has been a deliberate abuse and misuse of that system; and the court believes that there will be further abuses in the future as long as there is a semblance of that system remaining. It is the opinion of the court that this entire system must be abolished . . . Any future system for the distribution of auto-

³ *Ibid.*, page 770.

matic machinery must be on a basis of outright sale at reasonable prices . . . All the existing agreements, leases and licenses must be cancelled and any new agreements must be free of restriction and subject to the approval of the court. Hereafter any manufacturer of glassware may produce any item he desires. The machinery now under license by Hartford will be sold to the present licensees at reasonable rates."⁴

After review by the Supreme Court, the District Court's decision with respect to leasing was modified. The Supreme Court stated "Hartford should of course be compelled to lease machinery covered by its patents . . . on reasonable terms . . . and should be required to license the patents involved for manufacture and use or sale also on reasonable terms." The District Court stated "There is nothing to prevent the Hartford Company from continuing its established policy of leasing its machinery on a use royalty basis if it so desires, but certainly there is an injunction coming from the Supreme Court to the Hartford Company to license its patents on reasonable terms to all applicants who may desire to manufacture and sell the same machinery. This means, of course, the establishment of competition between the two methods of distributing machinery."⁵

Clearly the criticism of the Court was directed at the manner in which a strong patent position had been used to restrain trade. The decision did not condemn leasing *per se*. Leasing, like many other marketing devices, is subject to misuse. It would be most unfortunate if such misuses were permitted to obscure the benefits to individual users and to the business community that may be realized from a policy of leasing. But such legal decisions should serve as a warning to lessors that leasing may not be used to restrict a lessee's freedom in such a way as to result in restraining trade.

⁴ Federal Supplement 46, *op. cit.*, p. 621.

⁵ Federal Supplement 65. *United States vs. Hartford Empire Co. et al.*, No. 4426, District Court, N.D. Ohio, W.D., April 3, 1946, pp. 274-5.

While such decisions as those rendered on the Hartford Empire case serve to protect the lessee against undue restrictions in use, a lessee should recognize that some degree of control is inherently characteristic of the lease agreement. Some restriction is inevitable under the lease and a prudent management will consider this in determining the advisability of leasing. In some instances, the restrictions will be minor. The mere existence of such restrictions should not lead to a blanket condemnation of the lease. The importance of a specific restriction will vary between individual companies and must be evaluated in terms of the specific situation.

PURCHASING CONSIDERATIONS

Some leases have included objectionable restrictions on the lessee's freedom to purchase supplies. It should be emphasized again that such restrictions are not inherent in the lease. Nevertheless, it must be recognized that leasing agreements have been used by vendors to force the sale of auxiliary equipment and supplies. This abuse of the lease has been severely limited by antitrust prosecutions which date as far back as the early 1920's. At that time the Supreme Court enjoined the United Shoe Machinery Corporation from using various restrictive and tie-in clauses in its lease agreements. Among these was the so-called "supplies clause" which provided that the lessee should purchase supplies exclusively from the Corporation. And in the 1930's International Business Machines Corporation and Remington Rand, Incorporated, were ordered to cease requiring that the users of their equipment buy supplies from them. The technique of charging higher rentals to users who purchased supplies from other sources has also been held to be illegal.

In the past other techniques have been employed by lessors to encourage the sale of supplies. In some cases

manufacturers of both supplies and basic equipment have used their equipment installations as a method of promoting the sale of supplies by leasing the equipment at very low annual rates in order to secure the lessee's orders for supplies. From the user's standpoint this may have an important impact on purchasing. Selection of supplies may be based more upon the evaluation of the basic equipment installation than on the price and quality of supplies from competing sources. Of course, this policy of a lessor may run afoul of antitrust laws, since it might be held to be an unfair practice aimed at freezing out on supplies competitors who cannot use the lease on equipment to capture volume sales of supply items.

In any event users must recognize that their choice of equipment introduces certain pressures for purchasing supplies and auxiliary equipment from the equipment manufacturer. A lease may serve to accentuate such pressures. Although the argument is sometimes difficult to evaluate, the fact remains that the effective performance of the machine, as well as its cost of maintenance and repair, *may be materially* affected by the type of supplies used. Obviously, the vendor's reputation is threatened if his equipment does not live up to performance claims. Consequently it may be argued that if his own supplies are used, the equipment will operate at maximum efficiency. A user then may be subjected to a certain amount of pressure to secure supplies from the equipment manufacturer. This circumstance may well hold under either an outright purchase or the lease arrangement. But under the lease, the argument will be more forceful, since the lessor can show that he has a *direct* interest in the particular equipment installation.

As demonstrated, a lessor assumes a great interest in and responsibility for the servicing of leased equipment. Since ownership remains with the lessor under the lease,

he must take precautions against damage to his equipment resulting from improper use by the lessee. If an improper supply item is used it may increase the amount and cost of servicing required. If the rental is based upon units of output, the use of inferior supply items can reduce the lessor's revenue from the lease. In either case, the lessor can argue that he has a direct interest in the type of supplies purchased by the user. This consideration, under a leasing arrangement, can introduce purchasing problems for the user which are more difficult to handle than those which arise when equipment is purchased outright.

Even if it is assumed that there is no contractual agreement concerning the purchase of supplies, and that the lessor does not actively push the argument that his own supplies are essential for the maximum performance of the equipment, this purchasing consideration still exists. The user should anticipate that there will be an inclination to assume that supplies provided by the company who makes the equipment will be superior for use with that particular type of equipment.⁶ In purchasing as well as in leasing, a user must give particular attention to evaluating the factual basis for this assumption.

⁶ The value of equipment installations in serving to channel the user's purchase of supplies is well recognized by many managements. Illustrative statements in the Annual Report for 1946 of the Addressograph-Multigraph Corporation: ". . . Each new user is a continuous buyer of supplies and accessories for use in connection with the equipment . . ." "Through extended use of such equipment each new user is also a potential future prospect for the sale of additional supplies as well as new and replacement machines and equipment."

In the machine-tool field, the DoAll Company, Des Plaines, Illinois, recently (1949) announced a rental plan for its equipment. While the new rental plan was primarily an attempt to stimulate lagging equipment sales, this company hopes to realize an increase sale in tools and parts; the machines rented by the company use large quantities of cutting tools which are also sold by DoAll.

COMPETITIVE IMPLICATIONS

In general, an individual user tends to consider those factors which have to do with the profitability of the lease for his own operations. A wise decision, however, calls for some consideration of the competitive implications of leasing for industry as a whole. The individual user has a strong interest in these competitive implications since they have a direct impact on his own profit position. In addition, it should be recognized that past abuses of the lease have caused the lease to be suspect. If the lease is so continuously misused as to call for governmental intervention, the individual user, along with the industry, generally may find the adjustments required by the government to be most costly. The possible competitive implications of leasing are so diverse and in many cases so tenuous that it is difficult to reduce them to a few points of inquiry. However, certain claims and counter claims concerning the competitive implications of leasing have been voiced so frequently in legal considerations that it appears worthwhile to examine them briefly.

PRODUCT IMPROVEMENT

The first such competitive implication concerns the effect of leasing on product development. Some large lessors have been criticized for delaying the introduction of new and improved equipment. Since a lessor normally has a large amount of capital tied up in leased equipment, it is only natural to expect that he will wish to extend the period of rental receipts for this equipment. If radically new equipment is introduced it may mean a heavy financial loss on the old equipment. Because of such considerations a theory has been advanced that leasing tends to retard the rate of product improvement. It is argued that when equipment is sold outright a manufacturer

places greater emphasis on technological improvements since such improvements aid him to make new sales by rendering old machines obsolete and inefficient.

This criticism of leasing gains a certain credence from the United Shoe Machinery litigation. It was alleged that the Corporation stunted technical progress by buying machines for the purpose of suppressing their use in order to protect its investment in leased machines. The company's policy, at least until the 1922 Court decisions, of incorporating various restrictive clauses in their lease agreements that served to force the sale of equipment and supply items, gives support to such arguments. However, it is not clear that the net effect of leasing, even in this situation, is to retard product improvement. As pointed out by company spokesmen, the company would not have been able to continue its expenditures for research without the large and relatively stable revenue stream caused by the lease. Also, it must be recognized that the leasing system speeded up the mechanization of the industry by making it possible for small concerns to acquire equipment which they could not have purchased outright. Furthermore, the record tends to support the company's claim that it had followed a policy of modernizing old equipment by installing new developments.

This same challenge to the lease was stressed in the Hartford Empire Case where the court stated:

" . . . it destroyed in time all incentive to assist in the progress of the arts and sciences by developing machinery and equipment other than that of Hartford."⁷

In this case, however, the court's opinion was influenced materially by a clause in the licenses asserting that all improvements on the machines became the property of Hartford and that the license holder acknowledged the validity of the Hartford patents used by him.

⁷ Federal Supplement 46, *op. cit.*, p. 615.

Here again it is impossible to separate the competitive implication of the lease *per se* from the competitive results of a system of licensing. The position of control gained by Hartford was essentially based upon patents and a systematic restriction via licensing. It is fallacious to assume that such control is inherent to the leasing arrangement. While it is true that the necessity of a heavy investment in equipment may serve to reduce the willingness of a user to install new and improved machinery, whether he actually does refuse is not determined by the leases but by the force of the competition to be faced. As for the argument that there is more incentive for a vendor to stress product improvement under outright sale, it should be noted that a lessor *also* has an interest in product improvement. Often the revenue from a lease is based on the rate of output of the machines in which case improvements that raise output have a direct impact on the lessor's revenue. Furthermore, it should be remembered that product improvements do not always mean that the old machine must be scrapped completely. Many times, particularly in the case of heavy equipment where capital investment is highest, an old machine may be modernized by the addition of newly developed attachments or auxiliary equipment. In short, the criticism that leasing retards product improvement should not be a tacit assumption that the interests of the lessor are inherently in the direction of retarding or withholding improvements. It must be borne in mind constantly that the evils that may exist are not inherent in the lease but are functions of the degree and type of competition existing in the particular industry under review.

INDUSTRY STABILITY

Another important competitive implication of leasing relates to a possible use of a lease to "oversell" an industry

and thus create costly and wasteful competition. The reader recognizes readily that manufacturers use the lease to widen their markets. In fact, the authors have stressed this advantage of the lease to manufacturers. The advantage stems from the fact that concerns with limited resources can obtain the use of machinery which is beyond their resources to purchase. As pointed out, this is advantageous to the economy in so far as it facilitates freedom of entry and makes for high industrial flexibility. Many businessmen, however, stress the possibility that the ease of entering a field where adequate competition exists may be a mixed blessing. It is sometimes argued that if each new firm entering such a field found it necessary to make a substantial investment in equipment, the economic costs resulting from the demise of "shoestring" and "fly-by-night" concerns would be avoided. By making entry too easy, it is argued, wasteful competition is encouraged.

Such wasteful competition leads to a continuous state of excess capacity since, as the marginal firms fail, their place is taken by others who can come into the field with small financial resources as long as essential equipment can be leased. Such is the reasoning behind the allegation that the leasing system is one of the major causes of excess capacity in the shoe industry. Actually it would be difficult to prove that leasing has caused uneconomic competition. If it is argued that leasing does facilitate entry into the industry, then consistency in logic dictates that one admit that leasing also facilitates withdrawal. If entry and withdrawal is facilitated, the leasing system has served to increase the intensity of competition, to be sure, but many would hold that there is no stronger recommendation possible for a business practice than to show that it intensifies competition. It could be argued that, without leasing, fields in which heavy capital commitments are required would become controlled by a few

large firms. While such a circumstance would mean stability, it would be stability for the few firms in the industry; a condition offering small solace to the smaller enterpriser and surely of questionable value to the economy generally.

From the standpoint of the potential entrant, the lease serves to reduce the capital barrier that exists when high-cost machinery is required for production. In effect, under leasing the manufacturer supplements the usual sources of capital by supplying machinery to a user. As a result, new firms are given the chance to determine whether to enter the field. It may be, as critics charge, that many of these firms would not enter if the lease did not exist. The lease does not cause the entry; rather it overcomes the capital barrier to the entry. In short, the lease makes for effective competition by facilitating the entry and exit of firms from the industry. In terms of effective competition the *possibility* of entry is desirable even if actual entry is not widespread, since the established companies find it necessary to consider *potential* as well as actual competition.

DISPOSITION OF USED EQUIPMENT

The acquisition of used equipment by competitors at prices well below replacement cost is a problem that has long plagued industries that require heavy capital commitments. Businessmen, on occasion, have attempted various measures designed to restrict potential competitors from starting business with equipment purchased at "duress" prices. While competition based on this advantage alone may not be very serious, since successful operations also call for efficient management and business skills, however, in the past the problem has been acute in periods of depression.

Since a lessor owns the equipment, his policy with re-

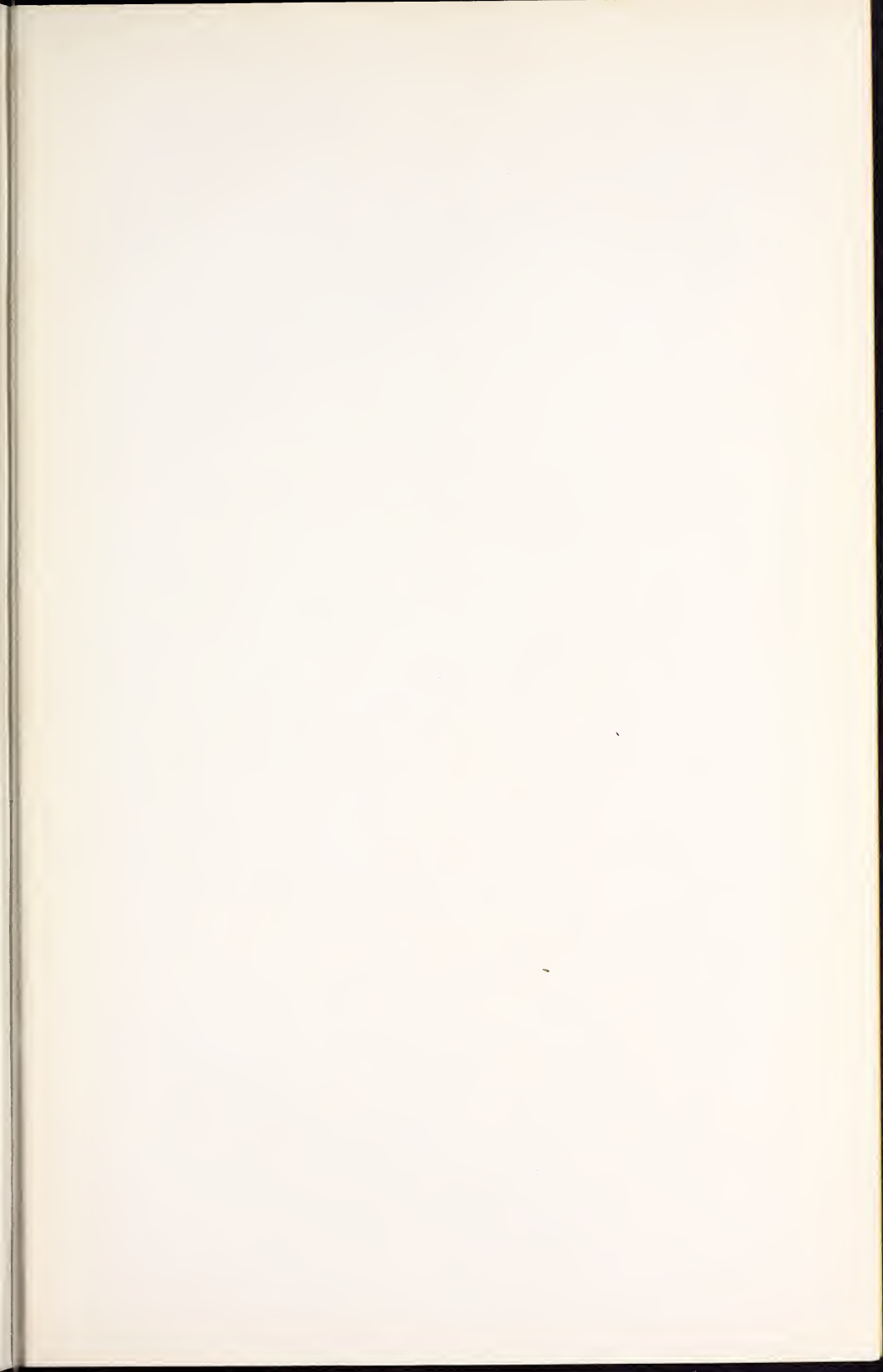
spect to the disposition of reclaimed equipment is of concern to the prospective lessee. Under leasing, a tendency exists to relocate used equipment in such a way as to minimize the competitive impact on successfully operated companies. When such equipment is sold by a bankrupted owner-user, the price is likely to be extremely low, since purchasers are limited to those in the immediate locality or to those who happen to know of the particular foreclosure. When a lessor reclaims equipment, he is in a position to dispose of it so as to avoid such a duress sale. In the first place, he knows more fully the potential purchasers of equipment since his sales organization has been selling to the various industries that use the machinery. In the second place, a lessor is not under the same pressure to dispose of the equipment as is a bankrupted owner-user. The revenue of a manufacturing lessor depends upon the operations of all existing installations, so that he will not consciously install reclaimed machinery where it decreases the volume of his other lessees. In short, under a lease, a user need not concern himself about competition with used equipment obtained at foreclosure prices, because the lessor assumes a share of responsibility for the disposition of secondhand equipment and is better able to avoid foreclosure.

SUMMARY

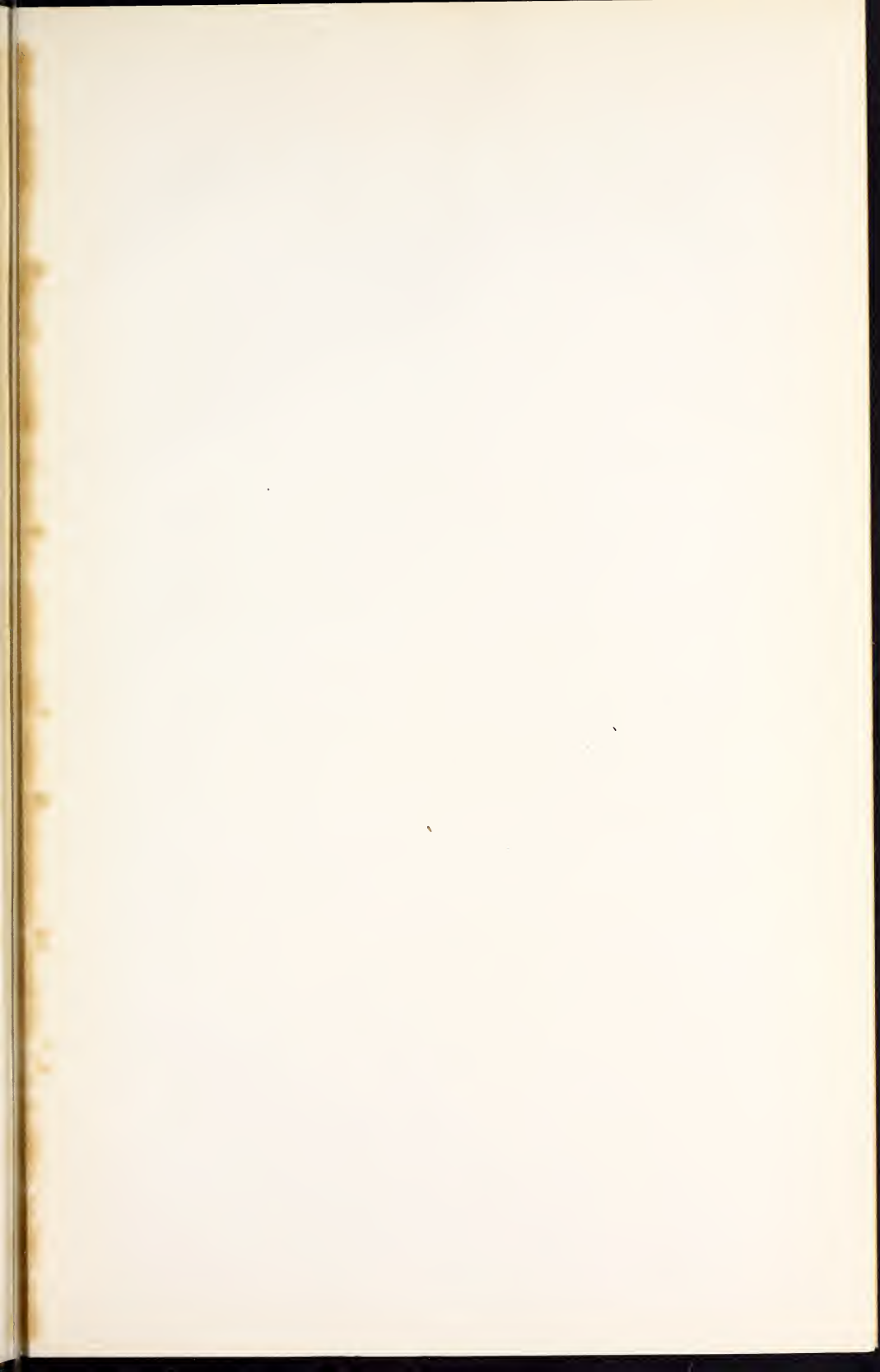
Actually of course, these diverse arguments cannot be appraised concretely. In such industries as shoe machinery, glass container machinery, and business machines, leasing has had diverse and tenuous influences. The lease has been criticized from two extremes. By some it is viewed as one of the instruments used to throttle effective competition, while others see it as fostering undesirable and wasteful competition. These conflicting claims of "too much" and "not enough" competition serve to point

up the fact that the lease *per se* is not invariably bad. Actually, the lease may be used in such a way as to make a substantial contribution to the maintenance of effective competition. It may contribute to a higher flexibility in the use of equipment and to an increase in the ease of entry and withdrawal from industry—two conditions of vital importance to effective competition.

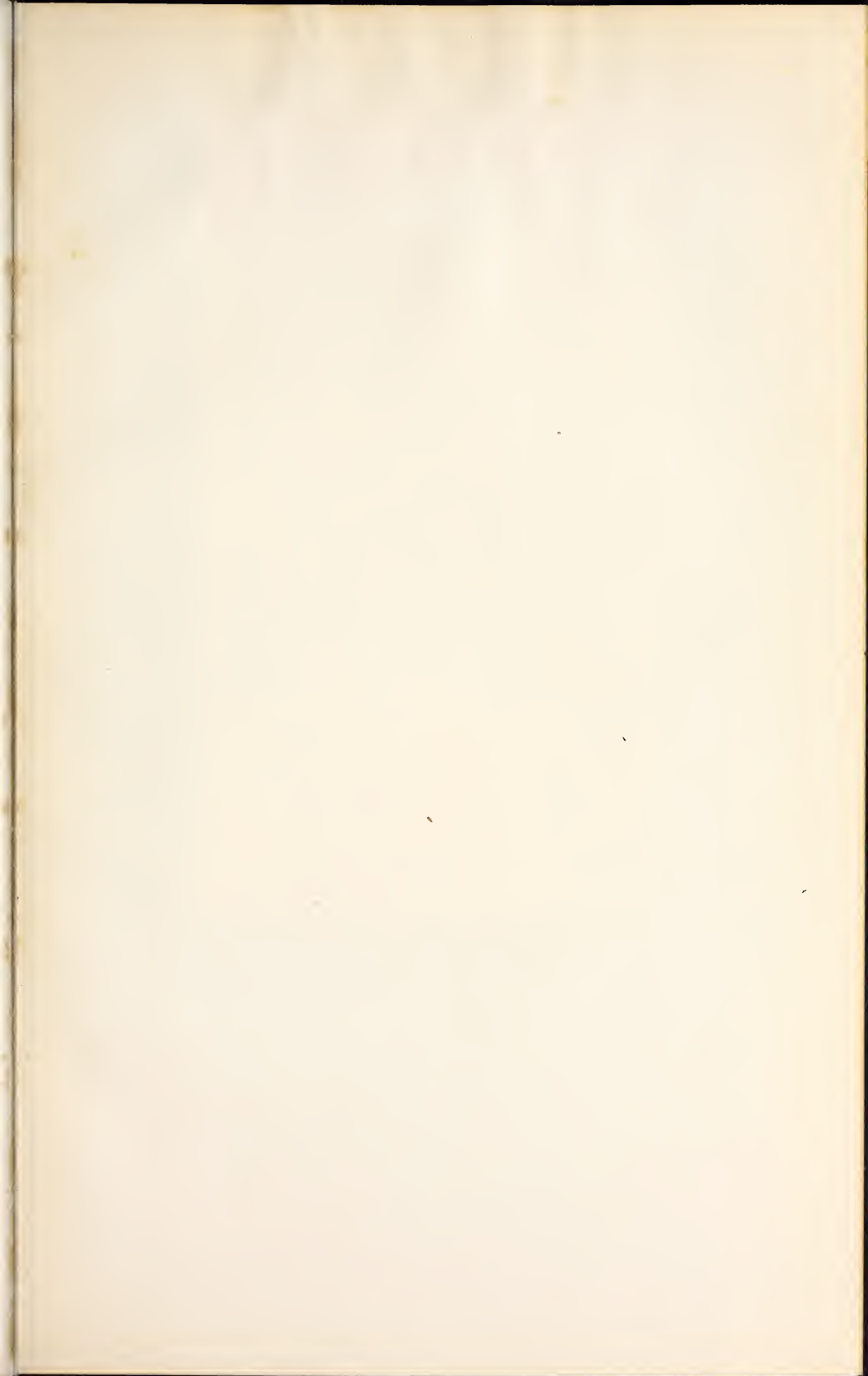
From an individual user's standpoint this review of the competitive implications serves to underscore the desirability of examining critically a lease agreement for purposes of determining whether objectionable provisions concerning (1) use of the equipment, (2) service requirements, (3) purchase of supplies, and (4) product developments, are incorporated in the agreement.











Date Due

MAY 24 '54	MAY 19 '54	
JAN 20 1956	JAN 20 1956	
FEB 6 '56	FEB 6 1956	
FEB 20 '56	FEB 21 '56	
MAR 21 '56	MAR 22 '56	
DEC 6 '60	DEC 6 '60	
JAN 4 '61	JAN 21 '61	

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